C45
7:78/2
c.2

March • April 2014 | $2.50

WILDLIFE IN NORTH CAROLINA

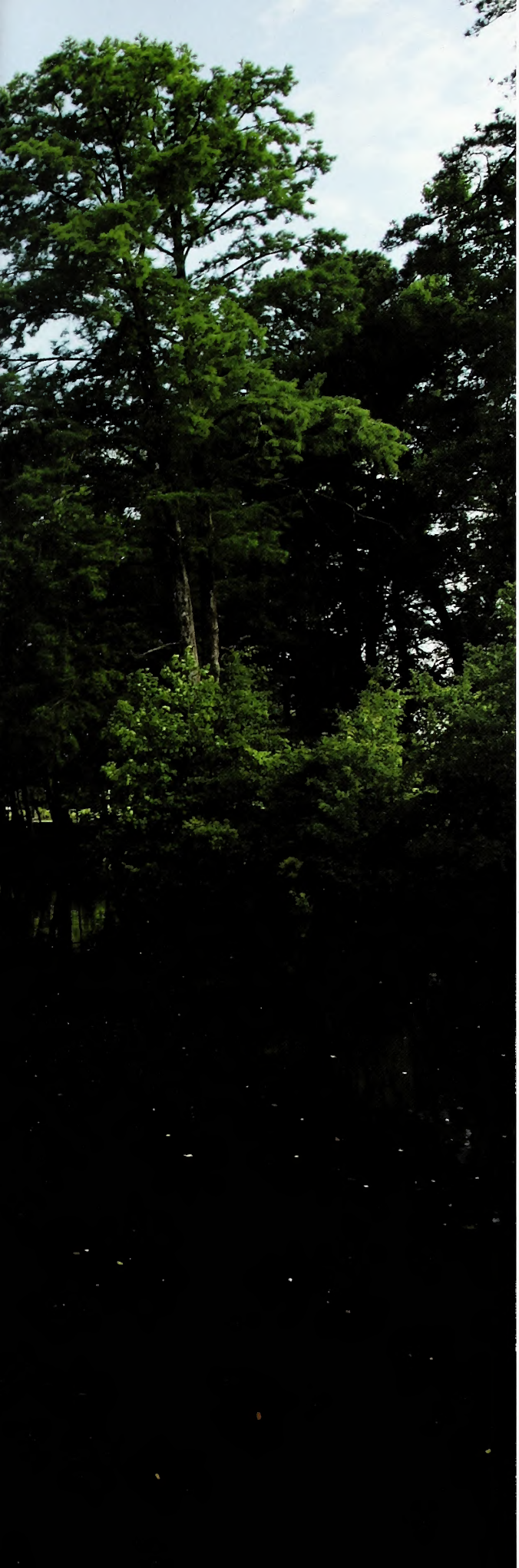
NORTH CAROLINA Wildlife RESOURCES COMMISSION

N.C. DOCUMENTS CLEARINGHOUSE

MAR 10 2014

STATE LIBRARY OF NORTH CAROLINA RALEIGH

The Dismal Swamp Canal is also part of the Intracoastal Waterway. Built in 1805, it is the oldest man-made canal still operating in the U.S.
PHOTOGRAPH BY MELISSA McGAW/NCWRC.



Volume 78 | Number 2

WILDLIFE IN NORTH CAROLINA

contents | march • april 2014

FEATURES

4 **A PERMIT FOR GREAT HUNTING OPPORTUNITIES**
written by John Green
Whether you want turkeys, deer or waterfowl, the Wildlife Commission has a game land hunt to fill the bill.

10 **WEATHER AND WILDLIFE**
written by Dr. Ed Brotak | photographed by Todd Pusser
North Carolina's size, geography and weather help make our state home for a variety of animals and plants.

16 **TRIBUTARY SMALLMOUTH**
written by Marty Shaffner | photographed by Melissa McGaw
No boat? No problem. Try the tributaries of North Carolina's famous bronzeback rivers for some great action.

22 **THE [GOLDEN] EAGLE HAS LANDED**
written by Christine A. Kelly
Research partners study this secretive bird that makes its winter home in the North Carolina mountains.

28 **GOBBLE, GOBBLE, BANG, BANG**
written by Ian Privette | illustrated by Jack Unruh
A tale of blown shots, botched hunts and long-awaited achievement.

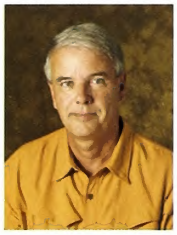
30 **HIGH TIMES ON THE DISMAL SWAMP**
written by John Manuel
What was once a place for American colonists to conquer has become a place of education and enjoyment.

DEPARTMENTS

2 EDITOR'S NOTE
3 LETTERS
36 WILD NOTEBOOK
40 BACK PORCH
43 NATURE'S WAYS
44 OUR NATURAL HERITAGE
45 OUTDOOR MOMENT

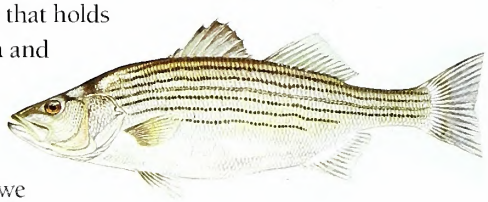
Cover: The golden eagle is a winter resident of the Appalachian Mountains in North Carolina. These majestic birds migrate from eastern Canada each year.
PHOTOGRAPH BY STEVEN COOPER.

Wildlife in North Carolina is the official educational publication of the North Carolina Wildlife Resources Commission. It is dedicated to the sound conservation of North Carolina's wildlife and other interrelated natural resources and also to the environment we share with them.



EDITOR'S NOTE

In the 21st century, eating is not the simple thing it used to be. Recently I heard a fellow say that his wife refused to eat anything that walked on four legs. Certainly she has lots of company in her dietary preferences. Plenty of people will eat neither cows nor pigs nor chickens, but will readily consume fish and shellfish.



I've never understood the reasoning that holds farm animals in higher regard than fish and shellfish. Is a striped bass or a bluefin tuna a lesser animal than a cow or a pig? They are not for me, and if I had to value one animal over another (and we all make those decisions, consciously or not), I would value a striped bass much higher than a cow. Yet, I eat striped bass every now and again, and I've never encountered a shellfish I wouldn't consume.

It's not that I don't like cows and pigs and chickens—on the table—I do very much. Other than that, I rarely think about them. They're farm animals, bred and raised to provide food of one form or another. Cows, pigs and chickens are exotic, domesticated species in our country. I suppose my own judgments on the worth of animals are based primarily on whether they are wild. For me, it is the wild animals that add richness to our world.

Whether people realize it or not, they have designated fish and shellfish as something less than other animals by choosing to eat them. Why is that? Familiarity probably is one reason. Who doesn't know what a cow or a pig or a chicken looks like? Children can go pet calves and piglets or hold a chick in their hands. In some cases, domesticated animals intended to become food become arm's-length pets.

About the only people who hold or touch live fish are fishermen. And fishermen tend to love fish, study them and think about their habits.

Sometimes what we choose to eat is an emotional response. My wife, for various reasons, only eats turkey, fish and shellfish. Being inordinately fond of pork myself, I asked her why she didn't eat it. "When I'd visit my grandma's, I'd get to slop the hogs, and I named them all and rubbed their noses. When I'd come back and pieces of pork were hanging on the back porch, I'd start crying and grandma would hold me and tell me that's what pigs were made for."

"But what about turkeys," I asked.

"I never had a pet turkey," she said.

Jim Wilson

Wildlife in North Carolina (ISSN 0043-549X) is published eight times a year by the N.C. Wildlife Resources Commission, 1751 Varsity Drive, Raleigh, N.C. 27606. Periodicals postage paid at Raleigh, N.C. and additional mailing offices. Subscription rates: one year $12, three years $30. All foreign subscriptions are $28 per year. Payable by U.S. Postal Service money order or U.S. bank cashier's check. All orders must be prepaid. Please allow 6 to 8 weeks delivery on new subscriptions and address changes. POSTMASTER: Send address changes to Circulation Manager, 1710 Mail Service Center, Raleigh, N.C. 27699-1710. Address all correspondence regarding subscriptions to Circulation Manager. For subscription help, dial 1-866-945-3746. Articles in *Wildlife in North Carolina* may represent the personal views of authors, and do not imply endorsement by the N.C. Wildlife Resources Commission. *Wildlife in North Carolina* is available on audio cassette through the Department of Cultural Resources, Library for the Blind and Physically Handicapped, Raleigh, N.C., (919) 733-4376. **The N.C. Wildlife Resources Commission is an equal opportunity agency.** Copyright©2014 by the N.C. Wildlife Resources Commission. No portion of this magazine may be reproduced by any means without the written consent of *Wildlife in North Carolina*.

WILDLIFE IN NORTH CAROLINA

MARCH • APRIL 2014 VOLUME 78, NUMBER 2

STATE OF NORTH CAROLINA
Pat McCrory Governor

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
John E. Skvarla, III Secretary

NORTH CAROLINA WILDLIFE RESOURCES COMMISSION
James W. Cogdell Norwood, Chairman
John Litton Clark Clinton, Vice Chairman
Joe Barker New Bern
Thomas A. Berry Greensboro
Joseph (Joe) Budd Winston-Salem
Vernon (Ray) Clifton Jr. Clarkton
John T. Coley IV Holly Springs
Mark R. Craig Greensboro
Richard Edwards Wilmington
Thomas L. Fonville Raleigh
Nat T. Harris Burlington
Michell Hicks Cherokee
David W. Hoyle Jr. Dallas
Wendell H. (Dell) Murphy Jr. Wallace
Wes Seegars Goldsboro
Albert L. Sneed Asheville
Timothy L. Spear Creswell
Garry Spence Charlotte
Brian White Manteo

Gordon Myers Executive Director
Mallory G. Martin Chief Deputy Director
Cecilia Edgar Deputy Director
Carol Batker Equal Opportunity Officer

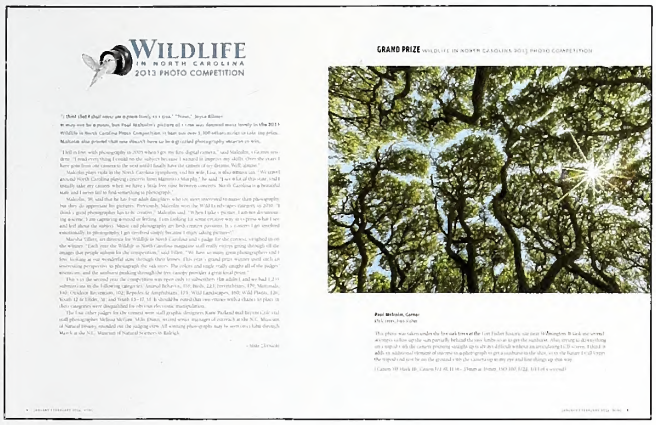
DIVISION CHIEFS
Col. F.O. Caveny Jr. Enforcement
Robert L. Curry Inland Fisheries
David T. Cobb, Ph.D. Wildlife Management
Erik D. Christofferson Engineering Services

MAGAZINE STAFF
Jim Wilson Editor
Marsha Tillett Art Director
Mike Zlotnicki Associate Editor
Bryant Cole Graphic Designer
Katie Parland Graphic Designer
Melissa McGaw Staff Photographer
Jackie Bullock Copy Editor
Jenny Harris Sales/Marketing Director
William T. Bolton Circulation Manager

CONTACT THE COMMISSION
ncwildlife.org

Report violations of hunting & fishing laws 1-800-662-7137
Boat registration & titling 1-800-628-3773 (NC VESSEL)
Seasons for migratory game birds 1-800-675-0263
Purchase a license 1-888-248-6834 (2HUNTFISH)
Report big game harvests 1-800-446-8663 (I GOT ONE)
Magazine subscriptions 1-866-945-3746 (WILDSHOP)

Sign up for the NCWRC e-newsletter at ncwildlife.org/enews


WILDLIFE IN NORTH CAROLINA 2013 PHOTO COMPETITION

GRAND PRIZE WILDLIFE IN NORTH CAROLINA 2013 PHOTO COMPETITION

Photo Competition Thoughts

The winning 2013 photo contest photograph made me think of a May 2012 paddle trip I made to the Roanoke River Partner's Beaver Lodge camping platform at the head of Upper Deadwater Creek near Jamesville. A perfect trip. I can still hear the fish jump and the owls hoot. Thanks to the N.C. Wildlife Resources Commission for a great publication.

Garry J. Bleeker
Fairview

Correction

I greatly enjoy your magazine, which I get annually as a gift from my old college roommate. I am a Louisiana native and still live in New Orleans, but I went to college at Duke University and currently have a cabin in the mountains near Asheville. I also work with insects at a museum here in New Orleans, and it's with that credential that I write with a correction for both you and a young photographer (who took a fine photograph that appears on page 27 of the January/February 2014 issue): the insect pictured is not a honey bee.

I am not able to discern with certainly what family it belongs to, but I suspect it is an Andrenid (the family is commonly known as "mining bees"). I imagine someone at an entomology or ag extension department at one of the UNC schools could help with a positive identification.

Keep up the excellent work with your publication. It is terrific!

Zack Lemann
New Orleans

Urban Deer Hunting Opportunities

Many people in our state would like to bow and or crossbow hunt deer inside city limits. The reason given is over-population and auto accidents. The opposition seems to be wounding of animals and safety concerns in heavily populated areas. I would suggest licensed hunters could be certified, after extensive training, to take the animals with the understanding the meat would be processed and used to feed the poor and others.

Let the hunters pay for the certification and courses such as safety, ballistics, city regulation and law. It would seem we have many licensed hunters that would qualify and would take advantage of this opportunity. P.S.: I recently purchased a fifth lifetime hunting and fishing license with one more to go. North Carolina has a wonderful wildlife program and I urge everyone to support ethical hunting and fishing.

Richard G. Whitworth
Greensboro

Man of Many Talents

In late November the nation and our state lost a man of many talents and a host of accomplishments. Bob Hazel devoted his professional life to the causes of wildlife and the many facets of our environment. Bob will be missed by all who knew him. I know his final flight was a smooth one.

Duane Raver
Garner

Editor: Robert Boyd Hazel, who had a long and distinguished career with the N.C. Wildlife Resources Commission, died Nov. 19 in Raleigh at the age of 91. Hazel, a native of Madisonburg, Pa., served as a pilot in Europe during World War II and flew 37 missions in B-26s and A-26s. Following his military service, Hazel returned to Pennsylvania and earned his bachelor's and master's degrees at Penn State University. Upon completion of his degrees, Hazel moved to North Carolina and went to work for the Wildlife Resources Commission.

He served as chief of enforcement and was instrumental in the Wildlife Commission using airplanes to aid wildlife enforcement. Later Hazel became executive director of the commission until he retired in 1980 after 30 years of service. Upon his retirement, he joined the faculty of N.C. State's College of Natural Resources, and also served as an adjunct professor at Duke University.

An Angola Bay Skull

This past fall while deer hunting in the very southeast corner of Angola Bay Game Lands I came across this skull. I have no idea what it is and not being a native of North Carolina, I can't even begin to guess.

I grew up and hunted and fished for 60 years in the Adirondacks of upstate New York, so hunting in the very warm weather of September and October is very new to me. We even saw several copperhead snakes. Deer hunting for us was cold and usually snowy. Any help with what this skull is would be of help.

John H. Grenier
(A new resident of North Carolina and love it)
Wilmington

Editor: After consultation with wildlife biologists, Mr. Grenier's skull turned out to be that of a white-tailed deer. The skull was not complete, but our biologists compared it to complete whitetail skulls in making the determination.

We want Your Feedback

Do you have a comment about content in *Wildlife in North Carolina?* Questions about something you read or have seen? Send us an e-mail at letters@ncwildlife.org.

write us *Letters should be sent via e-mail to* **letters@ncwildlife.org** *or through regular mail to Letters,* Wildlife in North Carolina *magazine, 1712 Mail Service Center, Raleigh, NC 27699-1712. Please include your name, address and daytime phone number. Letters chosen for publication may be edited for clarity and length. For circulation questions contact William Bolton at 919-707-0285. Editor Jim Wilson may be reached at 919-707-0177 and Associate Editor Mike Zlotnicki at 919-707-0175.*

A PERMIT FOR GREAT HUNTING OPPORTUNITIES

Written by John Green

ED JENKINS/CWDC

Whether you want turkeys, deer or waterfowl, the Wildlife Commission has a game land hunt to fill the bill.

A few days after the March 1 deadline, I checked the website of the N.C. Wildlife Resources Commission to see if I had been selected for the Jordan Lake Game Land and Tillery Game Land wild turkey hunting permits for which I had applied months earlier. After entering my Wildlife Resources Commission customer number and last name, the drawing results showed that I had been selected for Jordan during the third week, May 2–4, 2013, Thursday through Saturday. For the first time in three years, I had drawn a permit to Jordan and for the first time in four years, I was not selected for Tillery.

When May 2 came, I woke up near 4 a.m., ate a good breakfast, and drove from my home to the Jordan Lake Game Land, arriving well before first light. I was dressed in full camouflage, including a turkey vest with a flip-down seat pad, and my best calls and magnum turkey shells inside the zippered pockets. With my unloaded shotgun slung over my shoulder, I walked with a flashlight over a half mile to where I had seen turkeys while squirrel hunting. I walked as close as I dared to possible roost trees that I had marked on my GPS. I set out my decoys, a jake approaching two hens from behind

CURTIS WOOTEN/NCWRC

After walking about 100 yards into the woods, I called and the woods came alive with **A GOBBLE.**

in a triangle for maximum visibility, and waited for first light. When shooting light came, I loaded my shotgun and began softly calling. Nothing. It was like the turkeys had left the county. After a patient wait while calling more loudly and frequently, I collected my decoys and worked my way back to the road, calling periodically, trying without success to elicit a gobble.

I unloaded before approaching the road and drove a short distance to another location. After walking about 100 yards into the woods, I called and the woods came alive with a gobble. It sounded like the bird was close by so I sat in front of a large tree which covered my back and waited. Almost every time I called, I heard a gobble in response, but the bird did not come into range. I moved closer, set out my decoys and called again. More gobbling. He was down a small hill in a swampy bottom. He came closer but refused to come in. Two non-bearded hens, however, came to my calling which reminded me of the importance of seeing a beard before you shoot.(To avoid shooting hens and preventing future broods of turkeys, learn how to distinguish bearded hens from males by viewing photographs online before the hunt.)

The hens moved off and the gobbler still gobbled but would not come in. Instead of waiting patiently and NOT calling, I moved closer. (Not calling, after some brief excited calling and getting a gobble or two in response, will often get a gobbler curious and he may come to investigate.) The next time I called, I heard nothing. He must have seen me when I moved closer. I was upset with myself for not waiting him out. I was on his home turf and his patience had saved his life.

I decided to circle around and try him from a different angle and with a different call. I retreated and circled clockwise, staying well away from his sharp eyes and ears. I came upon the highly visible border of the game land and made certain to stay within its boundary to avoid trespassing on private land. Finally, after crossing a creek, a thicket, and a large stand of poison ivy, I came upon one of those wonderful areas that turkeys would love. It was a bottom with little undergrowth and tall, mature hardwood trees. I could see for over 100 yards to my left and about 50 yards in the other directions. I set out my decoys and moved back about 25 yards. I began calling but heard nothing. Frustrated and tired, I decided to rest and call on-and-off for 10 to 15 minutes before moving again. A few minutes later, I slowly turned my head to the left and saw a turkey about 80 yards away coming toward my decoys.

Permit hunting is a great way to hunt. With wild turkey permitted hunts, there are four days of no hunting between each three-day permit hunt, which minimizes hunting pressure. That also means fewer hunters chasing the permitted species than if the game land were unpermitted. You are more likely to win the draw in some permitted hunts than others. Hunts located around higher population centers, like Jordan, are more competitive than those located away from cities. Chances of being drawn depend directly upon the number of applicants, so they can vary year-to-year.

• Each June, the Wildlife Commission publishes the booklet *Permit Hunting Opportunities* in print and on its website, ncwildlife.org. (Click "Licensing" and Permit Hunting Opportunities). The booklet is full of permit hunts for dove, deer, bear, waterfowl, including tundra swan and geese, small game and turkey. There are also permit hunts available for disabled sportsmen, youth-adult, and youth accompanied by a non-hunting adult. The booklet has information about how to apply, names of the available permit hunts, names of game lands where a permit is required and the permitted species. The cost to apply per game land and species is usually $5 ($10 for tundra swan).

• In the case of turkey hunts, a hunter usually has four periods of three days each to prioritize per game land in hopes of being selected for one of them. Depending on the game land, deer and waterfowl permit hunts usually offer more hunting opportunities during their seasons. A hunter may make selections and pay online (24 hours), in person at a Wildlife Agent, by telephone at 888-248-6834, or in person at the commission's headquarters on N.C. State's Centennial Campus in Raleigh between the hours of 8 a.m.–5 p.m. during regular business days.

• The application deadlines differ for the various species. For example, the deadline for dove is in August, and the deadline for turkey is around March 1. Many of the deadlines are in the late summer or fall, such as for deer and waterfowl, so it is important to get the booklet as soon as it becomes available.

• Also, some permit hunts allow for party hunts with two or more hunters. This allows hunters to be placed together for the drawing (all or none) and avoids potentially inconsistent results from applying separately. To create a party,

- A hunter applies for a permit hunt and enters information on the other hunters at the same time.

GIFT SUBCRIPTION

WILDLIFE
IN NORTH CAROLINA

A gift card will be mailed to you to sign and give to recipient.

☐ 1 year $12 ☐ 3 years $30 See reverse for payment and mailing instructions.

Gift subscription to:

Name First MI Last

Mailing Address

City/State/Zip

E-mail

Donor information:

Name First MI Last

Mailing Address

City/State/Zip

E-mail

MBIND

PAYMENT

WILDLIFE
IN NORTH CAROLINA

For faster service, call **1-866-945-3746**
Or subscribe online: **ncwildstore.com/magazine.html**

☐ My check for $_____ is enclosed.

MAKE CHECKS PAYABLE TO:
N.C. Wildlife Resources Commission

MAIL YOUR PAYMENT TO:
Wildlife in North Carolina
1710 Mail Service Center
Raleigh, NC 27699-1710

Orders must be prepaid. We do not bill. Please do not send cash. Allow up to six weeks for delivery on subscriptions. $25 service charge for returned checks. (N.C.G.S. 25-3-506)

☐ Charge to MasterCard or VISA.

CREDIT CARD NUMBER

EXP. DATE

( )
Daytime Phone Number

Print name exactly as it appears on credit card

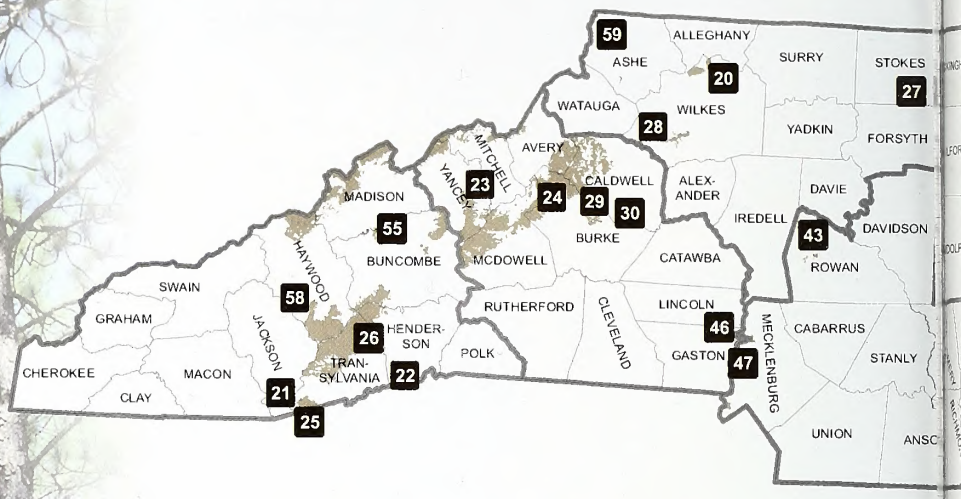
Credit Cardholder's Signature

MIKE FADGETT

JODY DUGGINS/NCWRC

Permit-only turkey hunts have proven very popular. For permitted wild turkey hunts, there are four days of no hunting between each three-day hunt, which minimizes hunting pressure.

JANE ROHLING/NCWRC

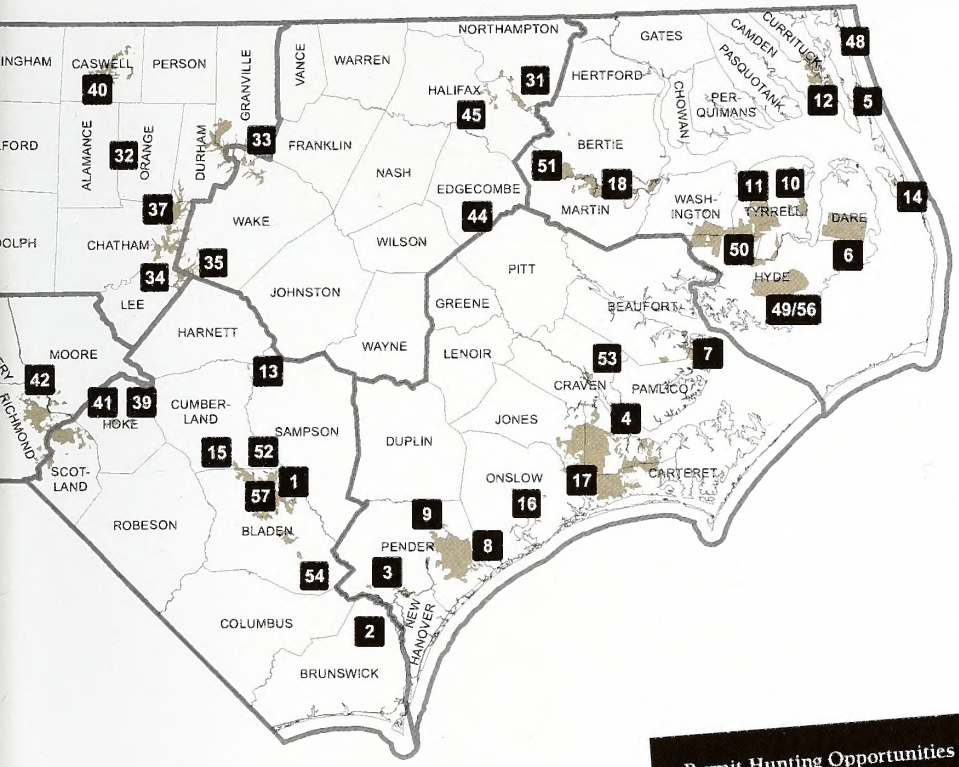


AREAS OFFERING
PERMIT HUNTING OPPORTUNITIES

- Alternatively, a hunter applies for a hunt individually and then shares the party number assigned to that application with other hunters for their use in applying separately.
- Each hunter must apply prior to the deadline.
- If selected, a permit will be mailed to each hunter.
- Additionally, permits for some hunts are issued without a drawing. They are sold beginning as early as July 1 by one of the methods of purchase mentioned above. The Permit Hunting Opportunities booklet explains all the choices in greater detail. The commission's website also contains detailed maps and regulations for each game land. Remember, many game lands are available to hunt a number of species without a permit, so do not overlook those.

Back at Jordan with my signed permit in my wallet along with my hunting license and driver's license, I watched the turkey march closer. I could tell it was a tom and he appeared to focus on the decoys. He never gobbled once. No doubt, he was not going to invite trouble from the other gobbler that I believed to be a couple of hundred yards off to my right. (The other gobbler was likely the dominant bird in that area.) When the approaching Tom disappeared behind some trees, I slowly placed my cheek on the stock of my shotgun, which had been resting and ready on my knee. I aimed generally straight ahead where I thought he would become visible again.

As I waited, the few minutes seemed like an agonizing 10 minutes. Turkey hunting is all about patience. Suddenly he popped out in front of me, my view no longer blocked by large trees. His head was red, white and blue and his beard was long. With him still focusing on the



decoys off to my right as he strutted, I aimed the bead of my shotgun and fired. Keeping gun safety in mind, I carefully went to him. (It is advisable to unload or at least have the safety on as you walk (not run) to a downed bird. If his head is up, shoot him again before moving.) To dispatch him, I placed my snake boot on his head, grasped his legs carefully to avoid getting spurred, and pulled upward. That breaks the neck to ensure a quick, humane kill, but be careful of those spurs. I punched my Big Game Report Card and photographed the nice tom. I then placed him into the carrying pouch of my turkey vest and put on a blaze orange vest which I kept hidden in my turkey vest while hunting. The vest helps alert any other hunters of my presence as I walked over a half mile back to my car.

When I arrived home, I registered my bird on 800-1-GOT-ONE (800-446-8663), writing the harvest number next to the punched circle on my Big Game Report Card before processing the tom. You may also register online at ncwildlife.org. He weighed 19 pounds, 9 ounces. He had a 10- inch beard and 7/8-inch spurs. The white meat was particularly delicious after it was sliced, marinated and cooked on the grill. (Check the commission's website for other wild game recipes.) Also, I made a nice tail-fan mount from a kit sold at a national outdoor retailer and that fan hangs on my home office wall to remind me of a great permit hunt. ◆

John Green is an avid hunter who lives in Wake County.

Coastal Region	Map #
Bladen Lakes State Forest Game Land	1
Brunswick County Game Land	2
Cape Fear River Wetlands Game Land	3
Croatan Game Land	4
Currituck Banks Game Land	5
Dare Game Land	6
Goose Creek Game Land	7
Gull Rock Game Land	56
Holly Shelter Game Land	8, 9
J. Morgan Futch Game Land	10
Lantern Acres Game Land	11
Murphy-Brown Corporate CURE Area	52
North River Game Land	12
Rhodes Pond Game Land	13
Roanoke Island Marshes Game Land	14
Roanoke River Area (Lower)	18
Rocky Run Game Land	16
Suggs Mill Pond Game Land	15
Turnbull Creek Educational State Forest	57
Weyerhaeuser-Cool Springs Env. Educ. Cen.	53
Whitehall Plantation Game Land	54
White Oak River Game Land	17

Piedmont Region	Map #
Buckhorn Game Land	32
Butner-Falls of the Neuse Game Land	33
Chatham Game Land	34
Harris Game Land	35
Jordan Game Land	37
Mecklenburg County Park & Recreation	47
Mountain Island Educational State Forest	46
Nicholson Creek Game Land	39
R. Wayne Bailey-Caswell Game Land	40
Roanoke River Area (Upper)	31
Rockfish Creek Game Land	41
Sandhills Game Land	42
Second Creek Game Land	43
Tar River Game Land	44
Tillery Game Land	45

Mountain Region	Map #
Belews Creek	27
DuPont State Forest Game Land	22, 26
Johns River Game Land	30
Mountain Research Station-Waynesville	58
Pisgah Game Land	23, 24
Sandy Mush Game Land	55
Pond Mountain Game Land	59
Thurmond Chatham Game Land	20
Toxaway Game Land	21, 25
Tuttle Educational State Forest	29
Warrior Creek Recreational Area	28

National Wildlife Refuges	Map #
Currituck National Wildlife Refuge	48
Mattamuskeet National Wildlife Refuge	49
Pocosin Lakes National Wildlife Refuge	50
Roanoke River National Wildlife Refuge	51

NORTH CAROLINA'S SIZE, GEOGRAPHY AND WEATHER HELP MAKE OUR STATE HOME FOR A VARIETY OF ANIMALS AND PLANTS

WEATHER AND WILDLIFE

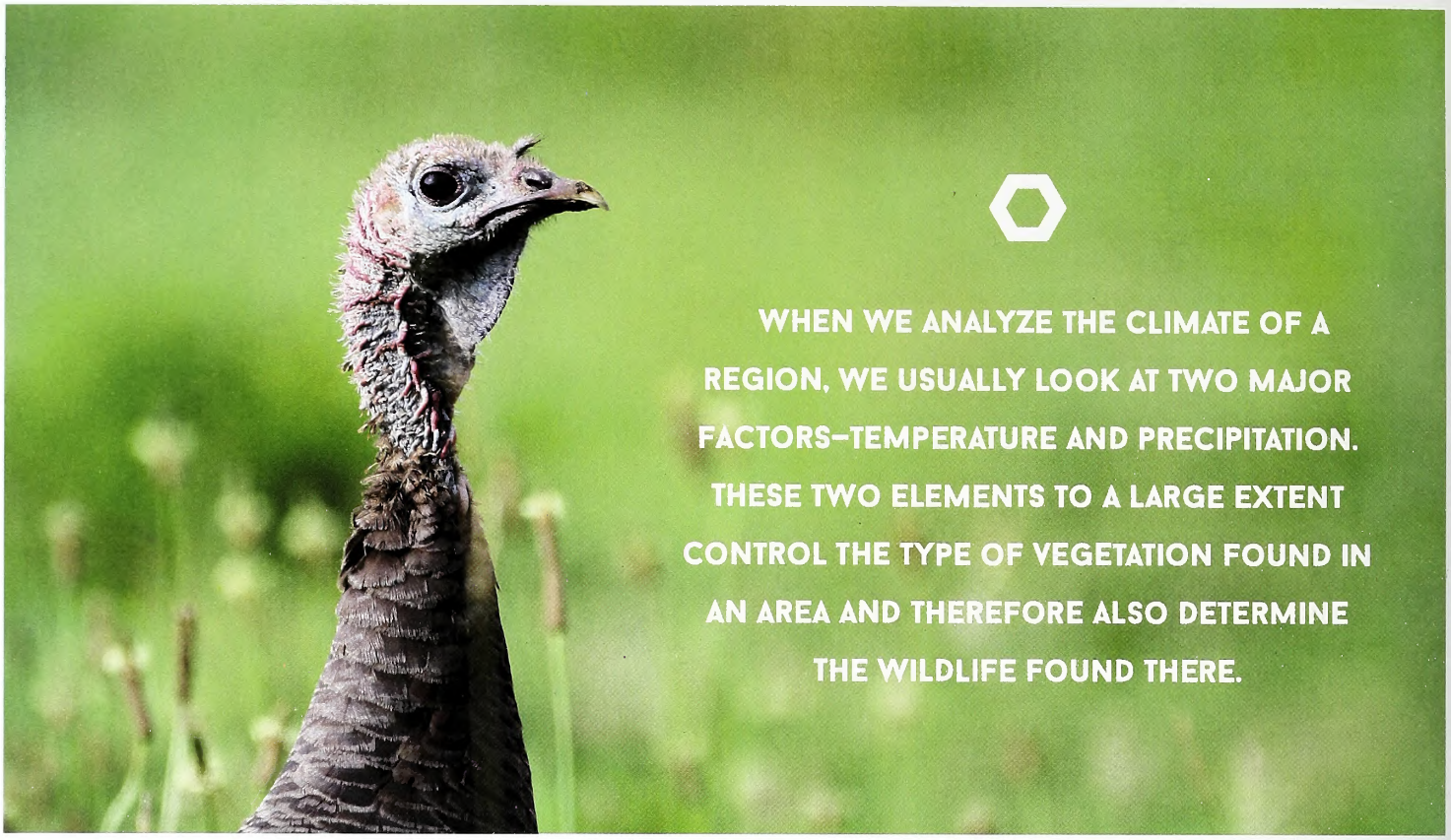
WRITTEN BY DR. ED BROTAK

PHOTOGRAPHY BY TODD PUSSER

Few locations offer the variety of wildlife that North Carolina does. You can see alligators in the swampy southeastern lowlands and you can hear the distinctive bugle of an elk in sections of the Western mountains. Why do we have such a wide array of wildlife here? It starts with the geography of the state.

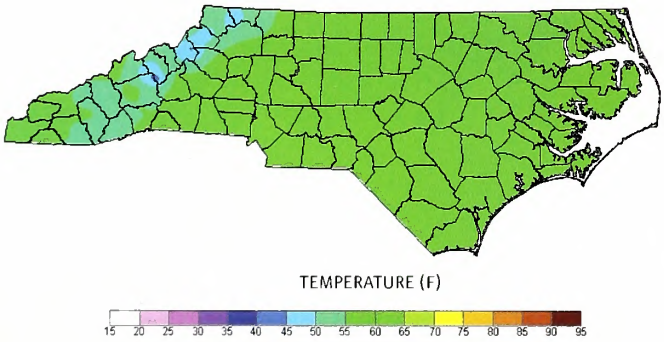
First, North Carolina stretches over 500 miles from east to west, from the Atlantic Ocean to the Southern Appalachians. Then, there is the difference in elevation, from sea level to 6,684 feet atop of Mt. Mitchell. At first, the elevation increases gradually as you head west across the Coastal Plain. Moving into the Piedmont, the elevation increases more rapidly. Raleigh sits at over 400 feet and Hickory over 900. Then you hit the Blue Ridge Escarpment which separates the Piedmont from the Mountains. This steep grade takes you up and over the first mountains in the Southern Appalachians. Asheville sits between mountain ranges in the French Broad River Valley at an elevation of 2,200 feet. Mountain peaks to the east and west quickly rise to over 4,000 feet.

Superimpose on that the normal weather patterns you experience at these latitudes. North Carolina, at about 35 degrees north, lies on the border between the warm climates typical of the Deep South and the much colder (particularly in winter) climates to the north. The result is that we get a mixture of weather systems from snowstorms in the winter to hurricanes in the fall. Temperatures in the state have ranged from 110 degrees to -34 degrees. We also have the driest location in the eastern United States and the wettest location in the eastern United States. The combination of weather and elevation produces a myriad of ecosystems and habitats.



WHEN WE ANALYZE THE CLIMATE OF A REGION, WE USUALLY LOOK AT TWO MAJOR FACTORS–TEMPERATURE AND PRECIPITATION. THESE TWO ELEMENTS TO A LARGE EXTENT CONTROL THE TYPE OF VEGETATION FOUND IN AN AREA AND THEREFORE ALSO DETERMINE THE WILDLIFE FOUND THERE.

Figure 1: NORMAL MEAN TEMPERATURE
BASED IN 1971–2000 NORMALS
ANNUAL



The Atlantic Ocean has a significant impact on the weather and climate of North Carolina. It is a source of moisture for much of the state east of the mountains. Winter storms and the occasional tropical cyclone in the summer or fall produce east winds that bring the moist air ashore. With the Gulf Stream just offshore, the coastal waters are warm, and this has a moderating effect on temperatures along the coast. This is especially true in the winter. In the summer, the moisture-laden air doesn't heat up as much, and we don't see the excessive heat (the 100-degree readings) as we do inland.

Although the Gulf of Mexico is hundreds of miles to the south, it also provides significant moisture to the state, including the mountain regions to the west. The counterclockwise flow associated with "Gulf lows" in the winter produce a moisture-laden southerly flow ahead of the storm system. In the summer, the clockwise flow around the massive Bermuda High can also bring in a southerly flow of moisture that fuels summer thunderstorms.

When we analyze the climate of a region, we usually look at two major factors—temperature and precipitation. These two elements to a large extent control the type of vegetation found in an area and therefore also determine the wildlife found there. And, although annual averages are important, seasonal variations are also crucial. With summers in midlatitudes being relatively warm, winter temperatures which vary greatly are often the determining factor in vegetation type. Similarly, annual precipitation amounts may be less important if rainfall is concentrated in a brief wet season followed by prolonged dryness. Extremes in temperature and precipitation can also have profound effects on the natural world as will significant storm systems.

Let's start by looking at temperatures in North Carolina (Fig. 1). The southern and eastern parts of the state have annual temperatures averaging 60 degrees or higher. Wilmington, for example, has an average temperature of 63.9 degrees. As you head west away from the coast, the warm ocean waters have less impact and the elevation increases. Annual temperatures decrease below 60 degrees by the time you reach Raleigh. The central part of the state to the mountains still has average temperatures of 55–60 degrees. Moving into the mountains, Asheville at an elevation of 2,200 feet still has a fairly mild temperature of 55.7 degrees. But as you go up, temperatures fall on an average about 3 degrees per 1,000 feet. In the higher mountains, average temperatures drop into the 40s. The average temperature at Mt. Mitchell is only 44.3 degrees, similar to the average temperature of Montreal, Canada and some 20 degrees

colder than the coast. The highest temperature ever recorded there is only 81 degrees. To put all this into perspective, as you travel from the Outer Banks to the Western mountains, it would be the same as going at low elevations from southern Georgia to southern Canada.

The temperature contrast is even greater in the winter, as shown by the average January minimum temperatures (Fig. 3). Average low temperatures range from above freezing along the southeast coast to the teens in the higher mountains. The average minimum temperature at Mt. Mitchell in January is 18.7 degrees and the lowest temperature ever recorded there was of -34 degrees on Jan. 21, 1985 and is the record for the state.

In terms of precipitation, most of North Carolina averages over 40 inches a year (Fig. 2). Compared to much of the rest of the country, this is abundant rainfall, and all of North Carolina classifies as a humid climate. Although the fall is typically drier than the rest of the year, there is no true dry season. Water is not a limiting factor in terms of vegetation or wildlife. The southeastern coastal regions get the most rain outside of the mountains, with some locations averaging over 60 inches a year.

Once you get into the mountain regions, annual precipitation amounts vary greatly due to topography and wind direction. The windward side of a mountain gets a lot of precipitation due to orographic lifting, i.e., the air being physically forced up over the mountain. The lee side has sinking air which warms and dries. This produces the so-called "rain shadow" effect with reduced precipitation. Asheville is nestled in the French Broad River Valley with high mountains to the east and west. The annual precipitation in the downtown area is only 37.3 inches, the least in the state. However, a short distance to the south we find the Southern Blue Ridge Escarpment. Lifting of moisture-laden air from the Gulf of Mexico produces excessive precipitation. Lake Toxaway averages 89.91 inches a year, and it's likely some mountain locations get close to 100 inches of precipitation a year. In terms of snowfall, southeast coastal areas do occasionally see snow but certainly not every winter. On the other hand, Mt. Mitchell averages over 90 inches of snow a year.

If we take the temperature and precipitation of a location, we can then classify it as one of the major climatic types. With mild temperatures and abundant rainfall well distributed over the year, much of North Carolina is classified as humid, subtropical. This means temperatures dip below freezing in winter but don't get that low. You can have some snowfall, but there is no permanent snow cover. Summers are fairly long and relatively hot but not excessively so. Precipitation occurs year round but more rain falls in the summer. It should be pointed out that North Carolina is on the northern edge of the climatic subtropics with colder, temperate climates just to the north (like Virginia).

Due to its altitude, Asheville has a somewhat colder and longer winter than locations at lower elevations. Asheville would be classified as a temperate, continental climate. At even higher elevations, the temperatures are cold enough to be classified as boreal climates, similar to southern Canada.

Figure 2: NORMAL PRECIPITAION
BASED IN 1971–2000 NORMALS
ANNUAL

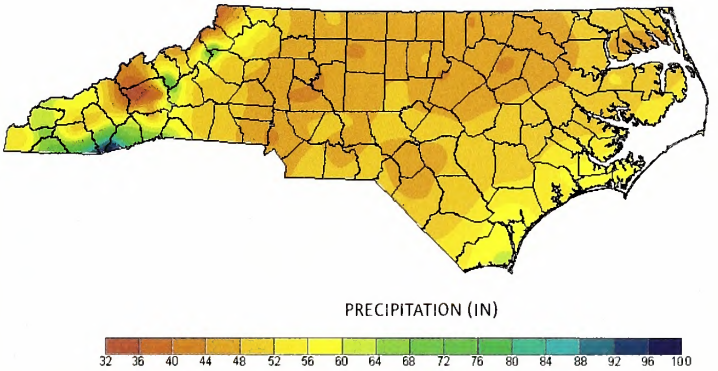
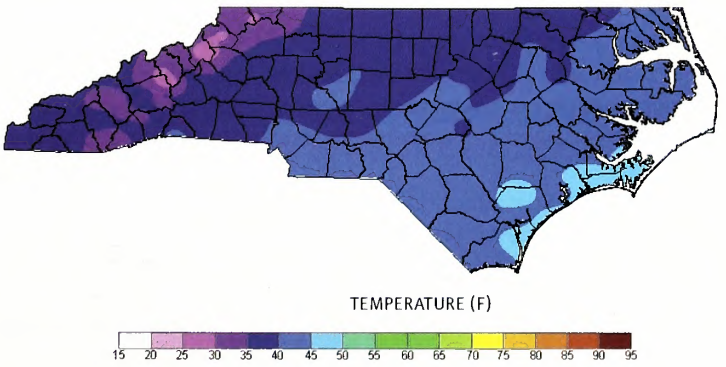
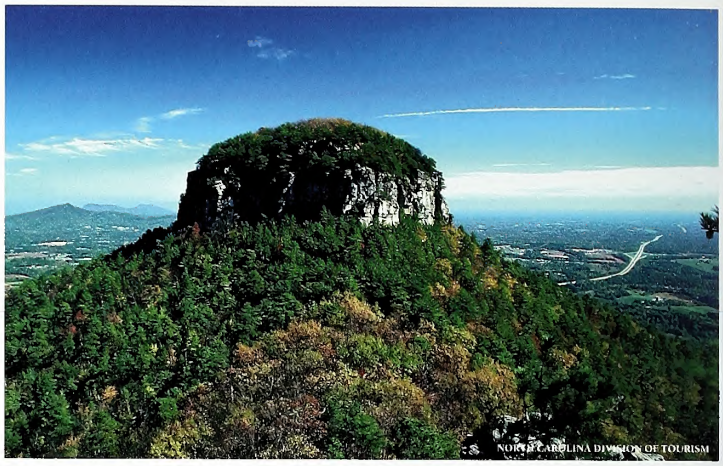


Figure 3: NORMAL MEAN TEMPERATURE
BASED IN 1971–2000 NORMALS
JANUARY





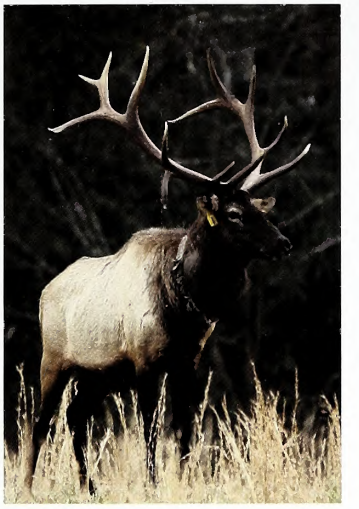
What does all this mean for vegetation? There is enough precipitation and it is evenly spread out over the year enough to support forests throughout the state. Only human activity, especially in the Piedmont, has negated this. Temperatures throughout much of the state would allow hardwood forests to dominate. Soil conditions in the Coastal Plain produce more coniferous forests. Only when we get into the highest elevations of the western mountains do we see a distinct change. Between 4,000 and 5,000 feet we begin to see a transition from hardwood to evergreen forests. The highest elevations support boreal-type forests of spruce and fir trees.

As for the wildlife, numerous species can inhabit all regions. White-tailed deer are everywhere. The deer population likely exceeds one million. Black bears and bobcats are common in the Mountains and in the Coastal Plain. Only the more populated and developed Piedmont lacks significant habitat for these species. Coyotes moved in from the west and are now ubiquitous and have adapted to living with man. Wild turkeys have also adapted to living with man and can be found most anywhere.

Of more interest are the animals which only occupy certain parts of the state and especially those which are at the extreme end of their climatic range.

Alligators are one such creature. When you think of alligators, you normally think of the Everglades in Florida or the swamps of Louisiana. Actually, alligators can be found all the way up the coast almost to the Virginia border. North Carolina represents the northern-most reaches of alligator habitat. The generous rainfall along the coast makes for abundant freshwater habitats. The gators love the warm weather of the summer, but the extreme heat found further inland is missing. On the colder days of winter, alligators can stay in the relatively warmer water. On fair days, they can bask on the banks and use the sunshine to warm their bodies. This past summer, a 500-pound alligator was killed after attacking and eating a large dog near Jacksonville.

Another cold-blooded resident that is at the northern-most part of its range is the Eastern diamondback rattlesnake. This is the largest and considered to be the most dangerous of the rattlesnakes.



The diversity of wildlife and habitat in North Carolina is impressive. From left, the American alligator inhabits coastal and inland counties in the eastern part of the state. The Southern flying squirrel can be found statewide. Pilot Mountain, located in Surry County, is a quartzite monadnock. North Carolina has a thriving herd of elk around the Cataloochee area.

It is only found in the sandy pine flatlands of the southeast Coastal Plain. The Eastern diamondback is now protected by state law and considered an endangered species in North Carolina. Its smaller relative, the pygmy rattlesnake, is also only found in the warmer, southeastern sections of the state. In contrast, the more adaptable timber rattlesnake can be found in the Coastal Plain and the Mountains.

On the other end of the state, there are elk. Elk are common in the U.S. Rocky Mountains and the wilds of Canada. But North Carolina now has its own elk herd. Once common in the southern Appalachians, elk were eradicated by over-hunting and habitat destruction here by the 1700s. In an attempt to re-establish an elk population, the U.S. Forest Service brought in 25 elk and released them in the Cataloochee Valley area of the Great Smoky Mountains National Park in 2001. The next year, they brought in 27 more. It's estimated there are 150 elk now in the area. Since the winters in the Southern Appalachians aren't as severe as the winters in the Rockies, our elk don't make seasonal migrations. They do, however, move about at various elevations. They've also adapted to eating things like acorns as opposed to just grass.

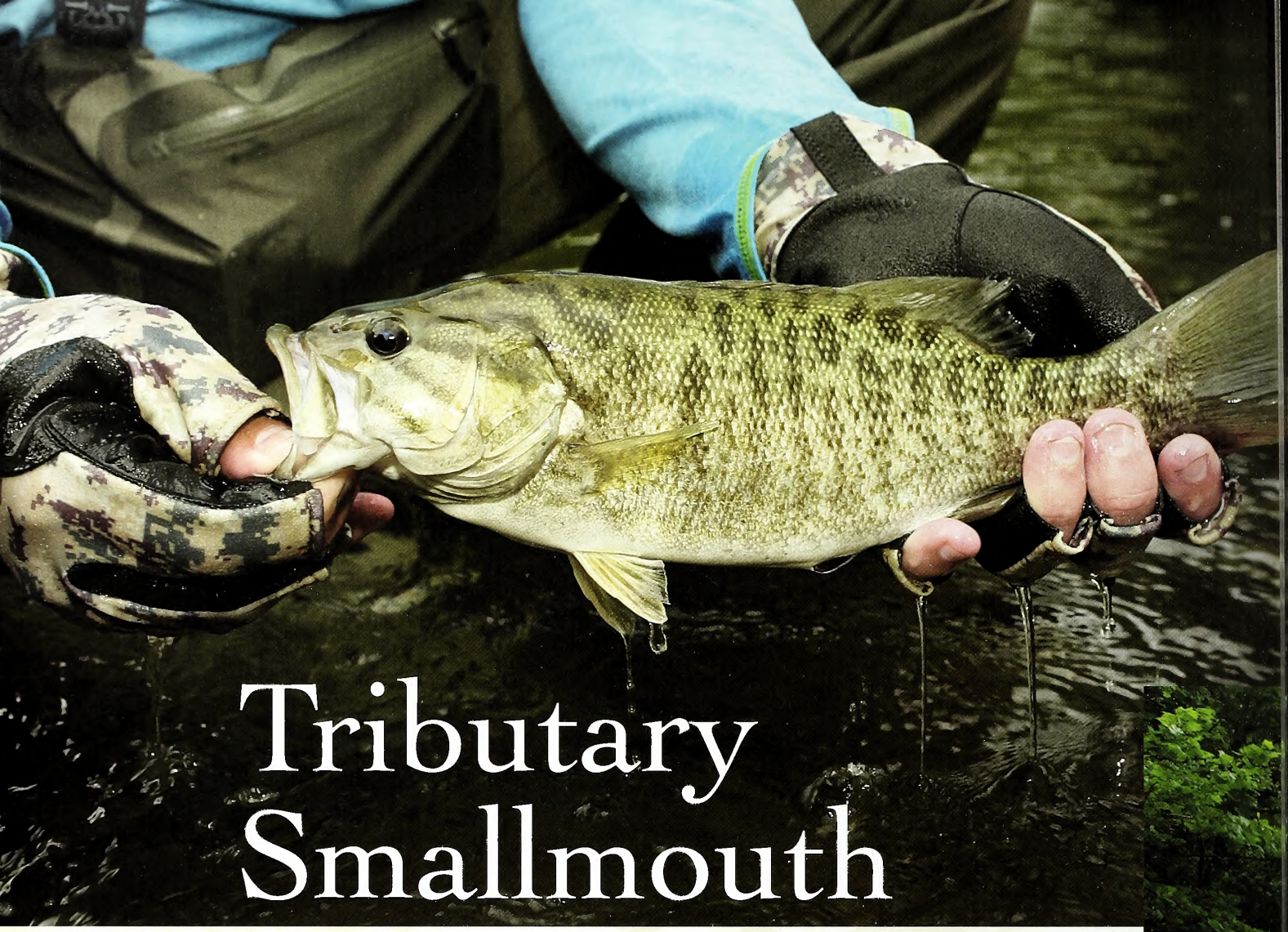
North Carolina is also home to a variety of squirrels. The Eastern gray squirrel is so common throughout the state that it was named the state mammal of North Carolina in 1969. The red squirrel is a more interesting specimen. Adapted to cold climates, it is commonly found in Canada. But, once again, the cooler conditions in the western mountains have allowed the red squirrel to extend its range to the south. The same is true in the flying squirrel family. The Southern flying squirrel is found throughout the state, although this nocturnal creature is seldom seen. But the Northern flying squirrel, preferring a cool and wet forest, is only found in a few mountain ridges, usually near 4,000 feet where the coniferous and hardwood forests meet. This is another species which is much more common in Canada.

You may wonder if all this diversity in plant and animal life is not also seen in the western United States where elevations vary widely. But many of these locations are considerably drier, and this limits ecological development. In North Carolina, water is abundant and feeds the diversity of life.

Vegetation and wildlife are adapted to the typical climate of a region. At times, though, it's the extremes in weather that can change everything. Hurricanes in one form or another have affected all parts of the state, including the mountains. Strong winds which can extend well inland can devastate forests. The storm surge can produce extensive flooding with salt water, while excessive rainfall can produce freshwater flooding well inland. In the winter snowstorms and especially ice storms can also wreak havoc on vegetation. Wild fires are dependent on weather conditions and can destroy everything in their path. Less spectacular but at times more destructive, droughts can take a tremendous toll on plants and wildlife. And finally just extremes in temperature, excessive heat or cold, can cause mortality in nature.

In the end, successful ecosystems integrate all of these weather effects and the plants and animals we find there have adapted to everything nature has thrown at them. ◆

Dr. Ed Brotak is a retired professor of atmospheric sciences at the University of North Carolina Asheville.



Tributary Smallmouth

Written by Marty Shaffner & Photographed by Melissa McGaw

No boat? No problem. Try the tributaries of North Carolina's famous bronzeback rivers for some great action.

A lot of anglers have never fished for smallmouth bass, which is a shame, because fishing for the bronze bass is a great experience. The excuses most people use are either not owning a watercraft able to float the rocky and ledge-filled rivers smallmouth inhabit, or the inability to find places suitable to wade-fish in these large rivers.

Although most of North Carolina's smallmouth rivers appear to be shallow, often they are filled with ledges with deep drops on at least one side of the ledge. That means one minute you're standing in water less than knee deep and the next step you've floated your hat. Another issue with the few good places to wade-fish on these large rivers is that they often are far off the road. That makes them hard to locate, and access can be a problem.

Many fishermen use canoes as their means of transportation when floating for smallies, and their main complaint is how difficult it is to fish effectively from a canoe. Canoes are hard on your back, difficult to anchor safely (trying to anchor in fast water can be very dangerous) and

Tributaries of larger rivers can provide good wade-fishing opportunities for smallmouth bass. Here, Hickory guide Dave Hise is fishing a tributary of the Catawba River.

unless you're a competent paddler, they are prone to capsizing. Capsizing a canoe obviously has potential safety hazards, but also can mean the loss of fishing rods and other gear which could easily total hundreds or even thousands of dollars.

So what are anglers to do who don't have a river-worthy boat, but still want to fish for what I consider North Carolina's greatest freshwater game fish? The answer is in a very under-utilized fishery — the tributaries of major smallmouth bass rivers.

In addition to smallmouth, some French Broad tributaries might contain a few brown trout.

I grew up fishing one of these streams, the Mitchell River in Surry county. What great memories I have of catching smallmouth while wade-fishing that water with my buddies from school. We would go to the stream with a spinning rod and a handful of in-line spinners, some small Rapalas and usually worms we had dug. If we ran out of bait and the fish wouldn't take our artificial lures, we would turn over rocks in the shallows and catch crayfish, hellgramites or even large stonefly nymphs. Hellgramites were the most prized for not only their effectiveness as bait, but their durability as well. Hellgramites are the tough nymphal form of the Dobson fly, and you can sometimes catch a half dozen or more fish before the nymph is rendered unusable.

We might think of those times as the good old days, but the good old days are still here. Almost all major smallmouth rivers in North Carolina have at least one tributary stream that is a decent smallmouth bass fishery and usually has rock bass, along with several species of panfish and perhaps the occasional spotted bass or trout. This mixed bag is part of the allure of these streams.

Where to go

Following are a few of the streams — listed by river basin — that have good smallmouth fishing. Just remember: Most, if not all, of these streams are on private property, and anglers should acquire permission from the landowner before heading out to fish. If you ask in a courteous manner you can usually find someone who will give you permission to access a section of stream to wade-fish.

Yadkin River Basin

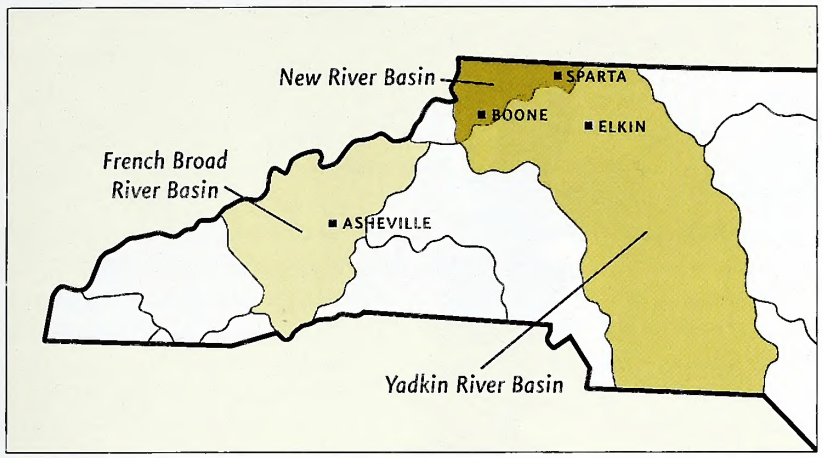
The Yadkin River has several tributaries that hold smallies. Probably the two best are the lower reaches of the Mitchell River and the Roaring River. Both of these streams begin as trout streams draining off the Blue Ridge mountains. From their mouths where they join the Yadkin, upstream for several miles, they have great smallmouth bass populations. The farther upstream you go, trout, especially brown trout, are a possibility.

The Mitchell River runs into the Yadkin downstream of Elkin along N.C. 268. The Mitchell holds smallmouth bass all the way up to the community of Mountain Park.

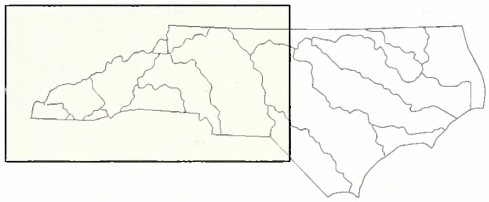
The Roaring River joins the Yadkin at the community of Roaring River, which is located on 268 between North Wilkesboro and Elkin. There are good populations of smallmouth for several miles upstream from its mouth and it is a great fishery.

New River Basin

Although the Little River joins the New in Virginia, all but a few miles flows through North Carolina. The Little River starts out west of Sparta and is a Hatchery Supported trout stream, but several miles downstream of town it becomes a rather large stream full of smallmouth and the occasional brown trout,



NORTH CAROLINA RIVER BASINS



some of which are quite large. A portion of the lower Little River runs along N.C. 18 north of Sparta.

The lower portions of both the South and North forks of the New are great bronzeback fisheries in their own right. The South Fork begins in Boone and flows north. The South Fork has good smallmouth populations from Todd to its confluence with the North Fork where the two form the New River between Crumpler and Mouth of Wilson, Va. The North Fork begins above Warrensville, where several small streams join one another and is, as most tributaries to large smallmouth rivers, a trout stream in its headwaters but becomes a pretty decent smallmouth stream before it joins the South Fork.

French Broad River Basin

The French Broad River, which flows through Asheville, is one of North Carolina's best smallmouth rivers, as well as the state's best muskie river. The French Broad's tributaries hold good smallmouth populations and also a few big brown trout. Forrest Marshall, head guide at Hunter Banks Fly Shop in Asheville, mentioned two French Broad tributaries in particular. Marshall suggested the lower portion of Big Laurel Creek that runs into the French Broad near Hot Springs. It has a mixed bag of smallmouth bass and panfish, as well as trout farther upstream. The other creek is Ivy Creek near Marshall. It flows alongside of N.C. 25 and 70 before dumping into the French Broad.

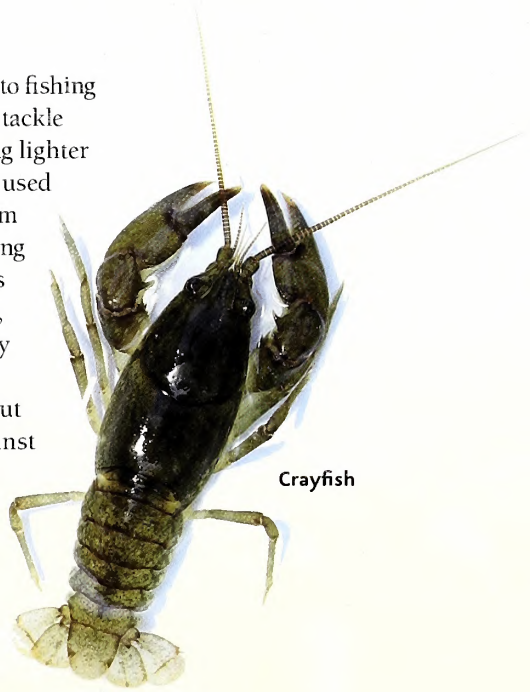
Many More

The tributaries of the Tuckaseegee River, such as the Oconoluftee River, contain smallmouth, as do tributaries of the Nolichucky and Tennessee Rivers. Almost all tributaries of any larger smallmouth bass river will have enough bass and panfish to warrant fishing and will possibly hold an occasional trout. If one of the streams listed is not near your home, don't despair. The western part of the state is full of streams that are small enough to wade and contain smallmouth bass. Do a little exploring; you might find an overlooked honey hole.

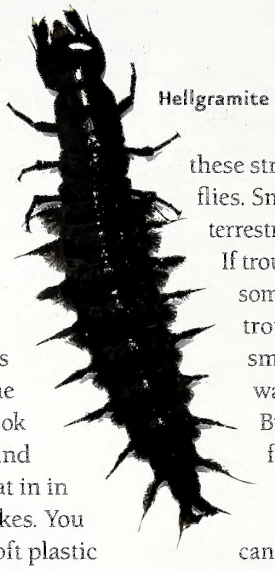
Tackle and Techniques

Spinning and fly tackle are both well suited to fishing tributary streams, although light baitcasting tackle can work if you are proficient with throwing lighter lures. Spinning tackle is probably the most used tackle for this type of fishing. Anything from ultralight to medium outfits will work, as long as you can cast 1/16-ounce to 3/8-ounce lures with it. Even though large fish are possible, most fish will be on the smaller side, so many anglers prefer ultralight outfits.

Line size can be 4-pound to 8-pound, but I prefer 6-pound for a little insurance against abrasion from rocks and other obstacles. The slightly heavier line is also nice to have when you hook that occasional large fish. Any quality monofiliment line is fine, as is braided line such as Power Pro of around 10- or 15-pound test. The newer braided lines have a much smaller diameter for the given pound test than mono, with a 10- or 15-pound-test line being the same or smaller diameter as 4-pound or 8-pound test monofiliment.


Crayfish

Lures that work on bigger waters also may be employed on tributary streams, although you may want to downsize them slightly. Tube worms of 2 to 3 inches and curly-tailed grubs fished on 1/16-ounce or 1/8-ounce jig heads work, as will Texas-rigged 4-inch plastic worms and lizards. Another good soft plastic



Hellgramite

bait are the Fluke Juniors, which are basically plastic jerkbaits. 1/8-ounce to 1/4-ounce spinner baits and in-line spinners can be very effective and are almost always good in murky water. Crankbaits, such as the Rebel crawfish, and other smaller crankbaits also can be productive. Other solid producers are the slim minnows like the Rapala and the new 1/4-ounce X-Rap by Rapala. Don't overlook top-water plugs such as Tiny Torpedoes and Pop-Rs. Both of these old standbys are great in in warmer weather and can bring vicious strikes. You can carry a nice assortment of lures and soft plastic baits in one of the mid-sized plastic utility boxes.

Live bait also is effective, although I prefer artificial lures because of their ease of carry as opposed to live bait, which must be carried in some type of container to keep the critters alive, and the fact that fish are more likely to be hooked deep with live bait. That being said, live bait is very effective on smallmouth bass. Hellgramites, crayfish, crane fly larvae, minnows and earthworms all make great bait. Hellgramites are best captured by holding a seine in a shallow rocky area of a stream while another person uses either his feet or a garden rake to turn over rocks. You'll also take crane fly larvae and crayfish with this method.

Just a few minutes in a good riffle of a stream should get you more than enough bait for a day of fishing.

Just a few minutes in a good riffle of a stream should get you more than enough bait for a day of fishing. One note is that seining is illegal in designated mountain trout streams, so don't be trying to gather bait in streams designated as trout water by the N.C. Wildlife Resources Commission. Minnows may be either seined or caught in a minnow trap baited with a doughball, earthworms may be dug, or night crawlers can be caught after a rain at night with a dim flashlight if you're quick enough. All three may be purchased at stores if you're short on time or don't have a place to gather bait.

Fly-fishermen also can have some awesome fishing on these tributaries. In fact, I'm surprised more fly anglers don't take advantage of these opportunities. Once the water warms enough, usually late June or early July, smallmouth and the other fish found in these streams can often be caught on topwater flies. Small poppers, Sneaky Petes and large terrestrial patterns all will produce great results. If trout also are found in the stream, try using some big terrestrials to up your chances at trout while not hurting your success on smallmouth and panfish. If the fish don't want to rise to topwater flies, try Woolly Buggers in black, brown or olive, stonefly nymphs or small crayfish patterns such as Whitlock's NearNuff Crayfish. Nymph fishing as you would for trout can be very productive as well. One or two patterns, such as Prince, Pheasant Tails or Hare's Ears, fished either singularly or in tandem under a strike indicator can produce nice catches of smallmouth. Gear is simple; an 8-foot to 9-foot rod in 5-weight or 6-weight with a floating line is all you should need. Reels aren't too critical, so any quality reel will work just fine. Leaders should be 9 feet just because they will work in clear or murky water. Tippet with a 4-pound to 8-pound strength (3x or 4x if using trout tippet) will be fine. Bass are not very tippet shy, especially on unpressured smaller streams.

A fanny pack or chest pack to carry your tackle or fly boxes and terminal tackle, along with some nippers, pliers and or hemostats should complete your gear. In the early season, anglers probably will want to wear waders, but later as the weather warms just a pair of felt-bottom wading boots or even an old pair of sneakers, if you don't mind slipping around a little on slick rocks, and a pair of shorts will do.

Fishing techniques are basically the same as for larger rivers. All the same types of structure and cover that large rivers have can be found in tributaries except on a smaller scale. You should look for fish-holding structure such as the deep side of ledges, larger boulders, undercut banks, mid-stream eddies and basically anywhere there is deep water with current or adjacent to deep water. The one difference between large rivers and smaller streams is that I have very seldom seen large bass in shallow water on these smaller streams. Often on big rivers trophy-sized smallmouth will move up out of deep holes onto shallow gravel flats to feed on crayfish and minnows. I'm sure they do this at times on smaller streams as well, but I would say that large smallies in tributaries do this mostly at night when they feel safer under the cover of darkness.

To fish this type of structure, cast baits far enough upstream of the structure you want to fish to allow

Streamers, such as sculpins and bunny leeches, often are great choices for anglers fly-fishing for smallmouth. Try a 9-foot leader with 3x or 4x tippet since smallmouth are not especially tippet-shy, especially on small, unpressured streams.

for the bait to sink to the bottom by the time it drifts into structure. This is a trial-and-error method that can only be perfected by time on the water. Distance of the cast upstream depends on the speed and depth of the water. With a little practice, an angler can get pretty good at judging where to place his cast. Crankbaits, small jerkbaits, Rapalas, curly-tailed grubs and spinners should usually be cast across stream and retrieved through likely spots. I have found smallmouth prefer a steady retrieve and usually a little on the fast side with these reaction-type baits. The exception are jerkbaits and flukes, which are best fished with hard, short jerks of the wrist with pauses after every few twitches. The key is to vary your presentation with different retrieves until you are successful, letting the fish show you what they want on any particular day.

Fishing these streams requires no special tackle, lures or flies, which means most anglers already have everything they need to fish. If you have never tried fishing these smaller streams for smallmouth bass and the other mixed bag of species that inhabit them, you really should give them a try. It is a great way to introduce yourself to smallmouth fishing and makes for a relaxing and uncrowded day on the water. I think you will find it to be a nice change of pace from angling on crowded trout streams and larger, more famous smallmouth rivers. (For more information on fishing for smallmouth, visit ncwildlife.org/Fishing/WheretoFish.aspx.)

Marty Shaffner is a fishing guide in northwestern North Carolina and a frequent contributor to Wildlife in North Carolina.

RAMBLE / INMAGINE.COM

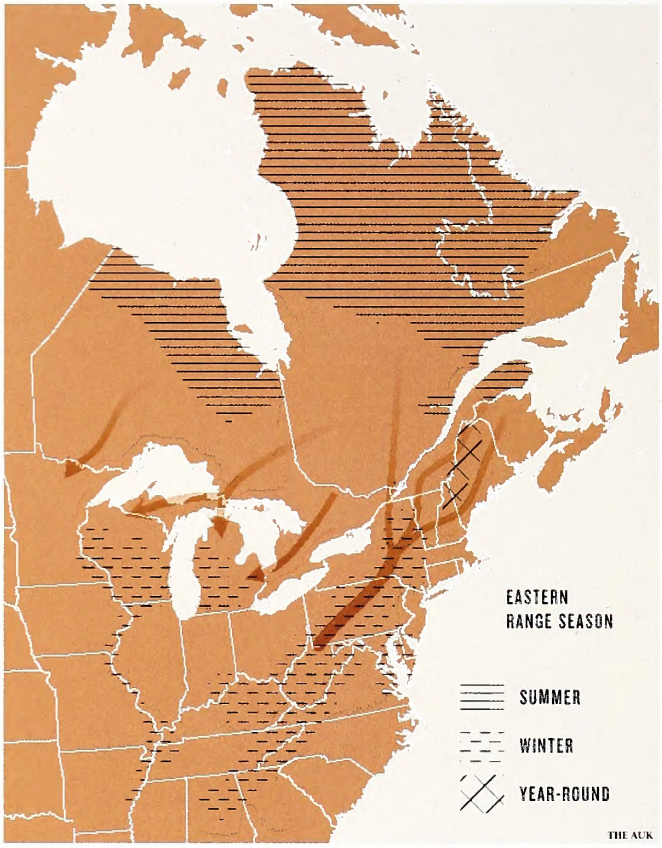
THE [GOLDEN] EAGLE HAS LANDED

RESEARCH PARTNERS STUDY THIS SECRETIVE BIRD THAT MAKES ITS WINTER HOME IN THE NORTH CAROLINA MOUNTAINS

WRITTEN BY
CHRISTINE A. KELLY

As you walk through the woods do you ever wonder what animals are watching you? I do. I think about deer bedded down in the snow, a skunk peeking out of a hollow log, a bobcat ducking silently out of sight at the sound of my footsteps. Here's another one to add to my list: golden eagle.

The golden eagle is remarkably secretive for such a large bird and therefore rarely seen. It will not dally more than a few minutes in close proximity to humans. This eagle spends the winter in dense forests at high elevations. So says the research coming out of the Eastern Golden Eagle Working Group. West Virginia University's Dr. Todd Katzner and his team track golden eagles with GPS transmitters. His particular interest is the migration and over-wintering of the Eastern golden eagle, and threats it encounters along the way. This is a small geographically disjunct population comprising an estimated 3,000 to 5,000 individuals that nest in eastern Canada (Ontario, Quebec and Labrador). The eagles venture south starting in October. Their destination? The Appalachian Mountains.



Golden eagles nest in Canada (Ontario, Quebec and Labrador) during the summer months and migrate south in the winter. Some find a winter home in the mountains of North Carolina.

As it turns out, they're here, but are so secretive and shy you might never know it while hiking through the woods. Early telemetry results showed the eagles wandering long distances, often venturing into the Southern Appalachians. While initial efforts focused on the Central Appalachians, the maps of flight paths and stop-over sites generated by Katzner's lab captured the attention of partners in the Southern Appalachians who began to wonder about the importance of our mountains to the golden eagle in winter. The tracked birds spent over half the year in the Appalachians and tended to stick to forests, often in remote areas … two things in good supply in the North Carolina mountains. With these new data in hand, the Eastern Golden Eagle Working Group invited the N.C. Wildlife Resources Commission to join the study.

In the winter of 2012–13, NCWRC biologists and volunteers joined partners from 14 other states in a golden eagle monitoring project intended to fill in winter distribution gaps. First, we selected sites meeting some basic characteristics of golden eagle overwintering hangouts: small openings in remote forests at high elevations. Next, we posted trail cameras aimed at road-killed deer carcasses. A camera station set early in the season (November 2012) by volunteer Mark Hopey of Southern Appalachian Raptor Research generated some captivating shots of a bobcat seemingly poised for the camera. As interest grew, so did participation. We expanded to 11 camera stations run by staff and eager volunteers. Soon we were all scanning road shoulders for dead deer. Every week to 10 days, NCWRC Conservation Technician Joe Tomcho navigated steep snow-covered mountain roads to replace deer carcasses and check cameras, while his counterparts Wes Duncan, Jim Keepfer and Michael Greene managed sites in the foothills and northern mountains. As we approached a camera station to change batteries and refresh the deer, we instinctively grew quiet and tiptoed over the snow, examining the myriad wildlife tracks. "Look over here!" someone would exclaim. There were tracks of coyote, bobcat, fox, raccoon, and mice. Those were our initial visitors and they rapidly consumed the deer meat. I received regular emails from veteran volunteer Alan Cameron operating a camera station in Transylvania County pleading, "Help! I need deer!" For a while, we all waited, feeling a mix of anticipation, hope, and doubt, wondering if we'd document at least one golden eagle here in our mountains.

On January 14th, Joe reported back from a camera check announcing, "The eagle has landed." There it was, this big, elusive, beautiful bird of prey, pictured next to a deer carcass, its talons gripping the deer hide, at 4:07 p.m. on Jan. 5, 2013. Judging by its medium brown plumage and absence of white on the base of the tail, our first "capture" was an adult bird. And this wasn't the only one: a golden eagle was documented at another mountain site on the afternoon of Jan. 13th. Between November and March, cameras documented golden eagles at five mountain stations in Alleghany, Mitchell, Wilkes and Yancey counties at elevations ranging from 2,981 to 5,388 feet and in habitats consisting of grassy balds or small openings on ridgetops surrounded by extensive forest.

While the majority of golden eagle pictures showed one eagle at a carcass, many pictures showed two goldens together at a carcass. Because these eagles were not banded, we used plumage characteristics to distinguish between individual birds. In all, we conservatively estimate eight individual golden eagles, up to as many as 11. They consisted of a mix of adult-plumaged birds and sub-adult birds with their white rumps and dark chocolate plumage. All donned honey-colored feathers on the head and nape of the neck for which the golden eagle gets its name. Someday soon, we may be able to confidently identify individual eagles using a type of eagle facial recognition software being developed by Katzner's lab. After all that anticipation, we enjoyed a sudden new appreciation of the importance of western North Carolina's high mountain forests to the over-wintering golden eagle.

The eagle was the obvious star of the show, but this project gave us a glimpse into the secret lives of many other species. In all, we documented 24 species visiting deer carcasses, including black bear, bobcat, coyote, red fox, gray fox, raccoon, opossum, Eastern spotted skunk, striped skunk, white-tailed deer, Eastern fox squirrel, mice, domestic dog, domestic cat, dark-eyed junco,

ANDY ASTBURY / 123RF.COM

NORTH CAROLINA DIVISION OF TOURISM

NATURE'S WAYS

Why do Golden Eagles Have "Fingers" on the Ends of Their Wings? See Nature's Ways, page 43.

[THREATS TO EAGLES]

Eagles will readily scavenge a carcass. Unfortunately, an eagle may also ingest lead bullet fragments found in discarded gut piles of hunted game. Lead toxicity can be lethal or sub-lethal, the latter predisposing the bird to other threats such as collisions. The severity of our bird's lead exposure indicated chronic exposure to lead over the course of its seven-plus year life and across its breeding, migration, and wintering range. Birds are more sensitive to lead than mammals. Lead also poses a human health hazard.

Golden eagles are known to walk long distances through fields and woods. In other states, biologists have followed tracks in snow for several hundred yards through forests. When this occurs, eagles are vulnerable to foot-hold traps used for furbearers. Because of this, neighboring states have instituted requirements about minimum distances between exposed bait and traps.

Many ridge-top locations having superior wind energy resources fall along the flight path of golden eagles. The birds are especially at risk of collision when flying at slow speeds and low altitudes to hunt. Fortunately there are no documented cases of golden eagles killed by turbines in the East. In the West, where the golden eagle population is much larger, turbines represent one of the most consequential threats to this species, and mortality resulting from strikes is on the rise.

blue jay, common raven, American crow, black vulture, turkey vulture, red-tailed hawk, red-shouldered hawk, bald eagle and, of course, golden eagle. In the camera's eye, dramatic scenes played out between the scavengers, the predators, the hungry, the brawny, the wily and the "fragrant." We observed interesting dynamics between top predators. For example, a bobcat fiercely held off a single coyote, but not a pack of coyotes. Bobcats buried the carcass in leaf litter, making it necessary to rake leaves off the site. Golden eagles ruled as alpha bird of prey. One picture showed a standoff between a golden eagle and a bald eagle, each strutting on opposite sides of the deer carcass. Flocks of dozens of feasting ravens scattered whenever a golden eagle arrived to feed. Slowly, the bravest ravens crept back to the carcass, carefully eyeing the eagle. In fact, the ravens inadvertently help the eagles locate the carcass, as the racket of a flock of Corvids draws the attention of a wandering eagle. One particularly intriguing non-eagle visitor to the deer carcass was an Eastern spotted skunk appearing at a site in Caldwell County. This lesser known and seldom seen skunk rivals our star golden eagle in beauty, sporting a luxurious white-spotted black coat, white patch on its head, and plumed black and white tail.

In February 2013, the NCWRC joined forces with Tennessee Wildlife Resources Agency and Katzner's lab to capture, band and transmitter a golden eagle at one of our North Carolina camera stations. We scrambled to set up blinds, refresh the deer carcasses and deploy a custom-designed rocket net at one of the sites that was frequently visited by eagles. Then we sat down, shivering in the cold, to wait. On the afternoon of the second bitterly cold day, my radio crackled with bander Trish Miller's voice saying, "Hey Chris, we got one!" Trish walked up the trail, bundled up in winter gear, happily cradling a hooded and booted golden eagle in her arms. She and her husband, fellow bander Mike Lanzone, set to work taking extensive morphological measurements, blood and feather samples that would contribute to studies on the genetics of the eastern population, contaminants (e.g., lead) and the bird's origin.

Just how big is a golden eagle? The adult male we captured weighed 8.7 pounds (remember, birds have hollow bones). To measure the length of the eagle's folded wing (23.8 inches), Trish and Mike had to use a yard stick rather than the conventional wing chord ruler used by other raptor and passerine banders. Even the banding toolbox was oversized, and not your usual fisherman's tackle box. The aluminum U.S. Fish and Wildlife Service leg band was of the pop-rivet variety used on larger raptors and is stamped with a unique band

[TAX CHECK-OFF]

Taxpayers can help North Carolina wildlife, such as golden eagles, with donations on their state tax forms each year.

Because donations can be matched with federal and other grants, the Wildlife Commission can double those donations. For example, if you make a $50 donation, it can allow the commission to access $50 in matching grant money, resulting in nongame and endangered wildlife in North Carolina benefiting from $100 of support.

North Carolina's income tax donations have helped fund success stories, such as peregrine falcons and bald eagles, which were once endangered but now soar high in our skies.

The Nongame and Endangered Wildlife Fund's tax check-off donations provide the largest and most significant source of non-federal funding for conservation projects to help these species. Every dollar of tax check-off donations the commission receives goes to the fund, where it matches federal and other grants, or is used to pay for educational activities and wildlife-watching projects like the North Carolina Birding Trail.

A golden eagle can soar in flight at 35 miles per hour and dive close to 100 miles per hour. The "fingers" formed by the emarginated primary feathers (shown pointing down in the picture above) aid in lift and decrease drag.

number that identifies this bird. Finally, Mike and Trish attached the GPS-GSM transmitter. The bird wears the transmitter like a backpack, with the harness tucked gently beneath its feathers. The transmitter measured about 4 inches long and weighed less than 3 percent of the bird's body weight, a rule of thumb biologists use to ensure that the added weight is not overtaxing to the bird. Powered by a lithium ion cellphone battery with a solar panel, this transmitter was programmed to collect locations from satellites every 15 minutes during daylight hours. It transmits data once daily when in contact with a cellular communications tower. When outside of the range of a cell tower, data are stored until the bird flies within range again.

While this bird was pictured by the trail camera, feasting on a deer carcass nine days after capture, we received no communication from the transmitter. At first we suspected the problem was a weak cell signal; much of this part of the mountains is in a "dead zone" for a cellular tower signal. More weeks passed with no data transmission, and then we received the results of the contaminants test. The level of lead in the blood was disturbingly high, at 30–33 µg/dL (micrograms per deciliter). This level indicates chronic exposure to lead. Furthermore, if sustained, this level would kill an eagle. Given this high lead level, there is a chance the eagle perished somewhere in the vicinity, within the no-signal zone for the transmitter.

Meanwhile, other golden eagles captured by Miller and Lanzone in the Southern Appalachians have provided some insight on late winter-early spring dispersal and, of particular note, their affinity to forested travel ways. A fifth-year male golden eagle captured in northern Alabama in February 2013 traveled an impressive 180 miles north from Kentucky into Indiana in just 30 hours, then further north into Michigan before turning south again toward Tennessee. Surprisingly, the bird made this trip three times before moving on to the breeding grounds in April. On each trip it closely followed forested areas, forested riparian corridors and reservoirs, moving quickly past open landscapes to the next forest patch.

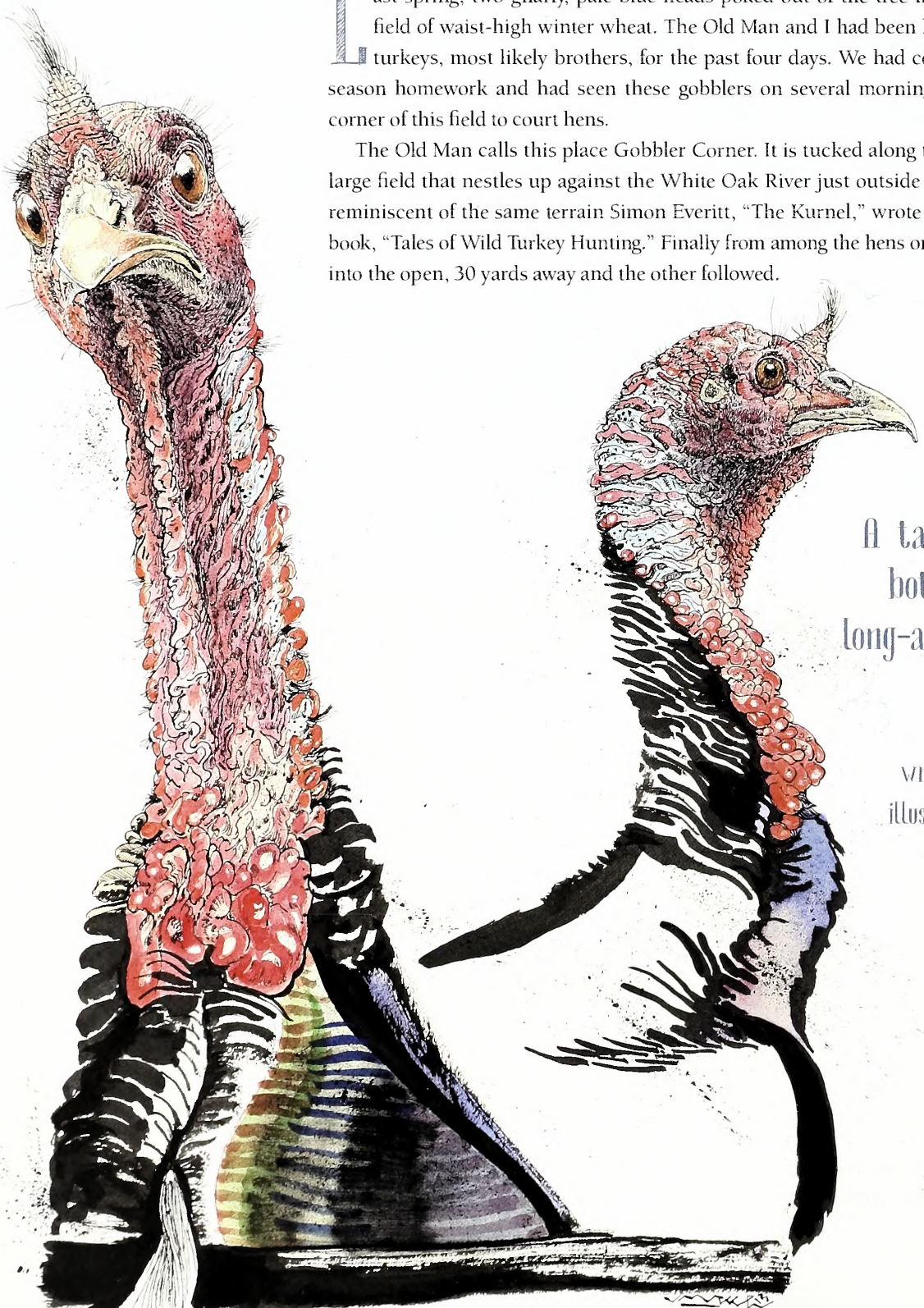
Despite the lack of dispersal data on the North Carolina bird, we've still learned a lot about golden eagles wintering in the Carolinas, including their affinity for remote forested tracts and occurrence at surprisingly low elevations where forest cover is sufficient. Now when I walk through the winter woods, I like to think I know approximately where I might be passing a secretive golden eagle that is watching me. ◆

Christine Kelly is a biologist with the NCWRC's Wildlife Diversity Program.

gobble, gobble, Bang! Bang!

Last spring, two gnarly, pale blue heads poked out of the tree line, overlooking a field of waist-high winter wheat. The Old Man and I had been hunting these two turkeys, most likely brothers, for the past four days. We had completed our pre-season homework and had seen these gobblers on several mornings, come into the corner of this field to court hens.

The Old Man calls this place Gobbler Corner. It is tucked along the back edge of a large field that nestles up against the White Oak River just outside of Jacksonville—reminiscent of the same terrain Simon Everitt, "The Kurnel," wrote about in his 1928 book, "Tales of Wild Turkey Hunting." Finally from among the hens one gobbler stepped into the open, 30 yards away and the other followed.



A tale of blown shots, botched hunts and long-awaited achievement

written by Ian Privette
illustration by Jack Unruh

"OK, you take the one on the right and I'll take the one on the left," the Old Man whispered.

"OK," I whispered back.

"Ready?"

"Yeah."

The Old Man started to count, "One, Tw..."

"Wait!" I interrupted. "I don't have a shot." The tom had ducked his head and neck behind a clump of grass.

I have shot at and missed turkeys for most of my life. It took me nearly 20 years of hunting with the Old Man to shoot my first turkey. And I have taken a good share of family ridicule for it, especially from my older brother. Even as adults, I still get a good-humored jab. "You going to go turkey hunting with the Old Man this year? Or you just gonna go shoot and miss?"

I did not follow the traditional path of most other hunters by shooting a jake first, then reaching that magical age when I could shoot a longbeard. I just missed. But I have good excuses. My first miss was because I was 8 years old and the Old Man thought it would be a good idea to put a 4x scope on his Winchester 1300 and let me hunt with it.

"If you see a turkey in your scope," he said, "aim for the base of the neck, and pull the trigger." I did. Only it was 90 yards away. Some kids are crack-shots, naturals, blessed with great form and instincts, either that or just plain lucky. I was none of the above. Realistically at that age, I had just barely mastered hitting a baseball that did not come off a tee. And despite my skill with scissors, my eye-to-hand coordination was marginal, at best. Therefore, it is no surprise that I did not have the calm, collected nerves of a skilled marksman. And, obviously, as we'll see, I had not mastered math either.

My gobbler's head reappeared from behind the tall grass.

"OK, got it." I whispered.

"Ready?"

"Yeah."

"Ok, One... Two... Thr (BANG!!)

The head and neck of my gobbler disappeared behind the grass. A pair of wings flopped on the ground. The built-up tension and adrenalin triggered a sudden rush of endorphins and relief. The Old Man had been talking hypothetically about this situation ever since we scouted these two turkeys. After all the years of no-shows and not-close-enough turkeys, I was shocked that these two birds actually had come all the way in. When I lifted my cheek from the stock of my shotgun, I realized I had not heard a second gun shot. Something wans't right. At the sound of my shot, the Old Man's gobbler startled, rocketed 6 feet up into the air, then banked and headed towards the woods. Why didn't the Old Man shoot? Did his gun malfunction? I looked over at him.

"DAD-GUMMIT, SON!! WHAT THE HECK IS WRONG WITH YOU!!!???" he yelled. I shrugged my shoulders. Honestly, I didn't know what he was talking about. I was under the impression that I had just shot a turkey. I felt pretty good about the situation. Then, reality snapped into focus and a knot twisted in my stomach.

"Can't you count to friggin' three? You have a dad-gum college degree and you can't count to friggin' three?" he continued to rant.

They say hunting can be a rare bonding experience between a parent and a child. They can spend a whole day together with hardly a complete sentence spoken between them. Yet, something deeply profound is still shared. This was NOT one of those experiences. I had literally jumped the gun and screwed up the Old Man's count system without realizing it. And The Old Man had reason to be mad. He had reminded me, 15 minutes earlier, before the gobblers showed up. "OK, it is One... Two... Three... then shoot. That way you have time to whisper, "Wait," if you lose a clear shot."

It is actually an "on-four" count. And it goes against everything you have learned growing up when you do things at the same time. For example:

"Will you help me lift this?"

"Yeah."

"OK, on three. One. Two. Three." (The lifting happens on three.)

"Wanna race?"

"OK. Ready. Set. Go!" (You break on Go!)

"OK. Let's jump on three."

Do you know what happens to the person who waits after three? He doesn't jump.

The "on-four" system is the same as giving someone a telephone number in the wrong rhythm.

"52-396-9-4. What? Did you just give me a social security number? Say that again."

It's just confusing.

Pumped up full of adrenalin, it was instinct to shoot "on three." And honestly, at the sight of those two gobblers, my brain turned to mush. I stood up to take the next round of verbal castigation from the Old Man.

"Wa... Wai... Wait." the Old Man grabbed my arm and held me back. "Don't move."

The second gobbler landed and stepped back into the open. The Old Man leveled his gun and pulled the trigger. BANG! The bird collapsed. The Old Man looked back at me and grinned.

"Son, I got just one thing to say to you. I want you to know that you are THE luckiest, dad-blasted, dad-gum, gall-darn turkey hunter alive in Onslow County. 'Cause your scraggly, low-down butt would be walking home right now, if I hadn't got a shot at that bird."

He had a good point. Rarely do you get a second chance at a second gobbler. As we approached the edge of the field, I could not see my dead bird. A mild wave of panic set in. The last images of flapping wings flashed in my memory and the thought of knocking my bird down and having it run off raced through my head.

"I might have missed my bird. I don't see it." I said.

"Well good," the Old Man replied. "Serves you right for not knowing how to count."

Tucked in the tree line brush, I found my bird, motionless, and 10 yards away from the Old Man's. After a few sighs of relief and a pat on the back, the Old Man's mood relaxed. I started to pick up our gear. Our hunt was a crowning achievement, the culmination of years of blown shots and botched hunts. A double on gobblers in Gobbler Corner.

"Wait a second." The Old Man announced. "I'm not ready to go just yet. I want to sit here a spell and bask in this glory. You know, if I hadn't got a shot at the second bird," he mused, "I probably would have had it coming. I cannot count the times I have shot a gobbler out from under your brother."

North Carolina native Ian Privette is assistant manager and head guide at Spotted Bear Ranch in Whitefish, Montana.

High Times AT THE DISMAL SWAMP

What once was a place for American colonists to conquer has become a place of education and enjoyment. WRITTEN BY JOHN MANUEL

JEFF BYRD

Imagine a conversation between George Washington, co-founder of the Dismal Swamp Company in 1764, and Joy Greenwood, current superintendent of the Dismal Swamp State Park.

GEORGE: "I understand the State of North Carolina has taken ownership of the Dismal Swamp. How is the sale of timber going?"

JOY: "We don't cut trees in the swamp anymore. In fact, we're trying to replace the cedar and cypress trees that you and others cut down."

GEORGE: "I see. How goes the draining of the swamp? We dug several ditches to try and accomplish that."

JOY: "We've stopped that practice, as well. In fact, we're trying to restore the hydrology to the way it was before the ditches were built."

GEORGE: "And the ditch roads. Have you abandoned those, as well?"

JOY "Actually, we're using the roads as bicycle trails."

GEORGE: "Bicycle trails. In the swamp?"

JOY "Oh, yes. Very popular."

It's not hard to understand why people in Washington's day saw the swamp as something to be conquered. Back then, it covered more than a million acres, an unbroken swath of trees stretching from Virginia's James River to the Albemarle Sound. This was a wilderness to be plundered for its timber and then converted to agriculture if at all possible. Colonel William Byrd II, a wealthy Virginia planter, took on the task in 1728 of leading a surveying party through the then-unnamed swamp to mark the border between the colonies of North Carolina and Virginia. After whacking through the tangle of vegetation for seven days, the party had covered fewer than 10 miles, prompting Byrd to declare it "a great dismal and dreary swamp not fit for man nor beast." Thus, the name was born.

Washington's Dismal Swamp Company was the first of a series of enterprises intent on logging and draining the swamp. For the next two centuries, these companies cut down the abundant bald cypress and Atlantic white cedar trees, hauled them out of the swamp by horse, railroad, and bulldozer, and shipped them off for manufacture as ship timbers, shingles and siding. When in the 1970s the supply of timber was finally exhausted, private enterprise relinquished its hold on the land.

In 1973, Union Camp Corporation donated 49,000 acres of land to The Nature Conservancy. The Conservancy transferred the land to the U.S. Fish and Wildlife Service, which eventually procured 112,000 acres in Virginia to become the Great Dismal Swamp National Wildlife Refuge. North Carolina was able to purchase 14,000 acres, which became a state park in 2007. Together, the 126,000 acres straddling the Virginia/North Carolina border represents a huge chunk of land, enough to support a diverse population of wildlife and give visitors the chance to experience a taste of wilderness.

Located off of U.S. 17 in the northeast corner of the state, the Dismal Swamp State Park is unfamiliar to many North Carolinians, but hugely popular among people in the Elizabeth City and Norfolk/Hampton Roads, Va., area. And its fame is growing. In 2012, the park logged more than 80,000 visitors from as far away as Australia.

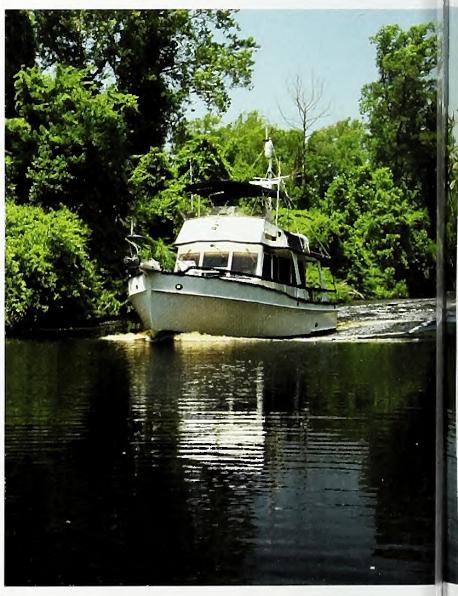
To access the park, visitors must first cross the Dismal Swamp Canal, which parallels U.S. 17 and forms the eastern boundary of the park. This is done via a swing bridge that park staff periodically open to allow boaters on the canal to pass. Standing on the swing bridge, visitors have a chance to ponder a truly remarkable piece of engineering. The 22-mile-long canal was dug by hand mostly by slave labor between 1793 and 1805. For more than a century, it functioned as the main commercial waterway between the Chesapeake Bay and Albemarle Sound. Now, it is used primarily by recreational boaters traveling the Intracoastal Waterway. The sight of a big sailboat or yacht cleaving the narrow channel is a thing of beauty, and many boaters regard this intimate, tree-lined passage as their favorite section of the 3,000-mile-long waterway.

Once across the bridge, visitors arrive at a handsome visitors center constructed on a bluff overlooking the canal. This building contains outstanding displays on the history and ecology of the swamp. It is also the place to pick up a map, talk to a ranger and plan out one's exploration of the swamp.

There are a number of options for how to do this. The easiest and quickest way to get a feel for the area is to follow the boardwalk, which loops out from the Visitors Center into the swamp. The park is proud of this boardwalk, which was constructed by two employees, Carlton Griffin and Bruce Rountree, who labored through the heat, bugs, rain and snow of 2008–2009. The boardwalk winds among red maple and pond pine, trees that emerged dominant following the logging out of the bald cypress. Bright yellow prothonotary warblers flit in the lower canopy, the occasional raccoon hunts the shallow waters.

One can experience another dimension of the park by renting a canoe or kayak at the visitors center and paddling along the Dismal Swamp Canal. (A private company, Great Dismal Adventures, offers guided pontoon boat tours of the canal. See great-dismaladventures.com.) Here, one has a good chance of seeing yellow-bellied slider turtles, blue and green herons and possibly a bald eagle. Various species of fish, including chain pickerel, catfish, perch, bream, and gar can be caught in the canal, but the populations are small because the tannic acid in the water is toxic to fish eggs.

ALL PHOTOS THIS PAGE BY MELISSA McGAW/NCWRC



The Great Dismal Swamp has come a long way since being dubbed "a great and dreary swamp not fit for man nor beast" by Col. William Byrd II in 1728. Now more than 20 miles of trails and roads serve hikers and 72 species of birds lure birdwatchers. In 2012 the Dismal Swamp State Park logged more than 80,000 visitors. Left, in 2010 a forest fire burned peat down as far as 6 feet deep over an area of 6,500 acres. It burned for 110 days and created this lake littered with charred trees.

To experience the vastness of the swamp and its abundant wildlife, one should rent a bike at the Visitors Center and explore the park's more than 20 miles of dirt roads/trails. These roads are leftovers from the timber-cutting days, built from compacted soil dredged from the neighboring ditches. The roads run in absolute straight lines—not the layout one would prefer for a nature trail—but have a surprisingly bucolic feel thanks to their isolation.

Within minutes of departing the Visitor's Center, riders are immersed in silence. Trees overhang the right-of-way, dappling it with bands of shadow and light. The woods to either side are wet, dense, and buggy. Enter here and one is asking for trouble. Greenwood tells of a visitor who during the winter walked off the road into the swamp, got lost, and ended up spending the night.

"We spotted him from the air," Greenwood said. "He was only about 500 yards off the trail, but didn't know it."

Appreciative of the flat, open surface, all manner of wildlife use the grassy rights-of-way for travel and forage. Swamp rabbits, wild turkey, deer, and a variety of songbirds dart in and out of view. The Dismal has more than 72 species of birds in residence at one time or another, and is ranked as an Important Bird Area by the Audubon Society. Professional photographer Jeff Byrd of Norfolk, Va., says the swamp is one of his favorite destinations.

"Since I began birding in eighth grade, the Dismal Swamp has held quite an allure for me," Byrd said. "Spring migration can be nothing short of phenomenal at daybreak. The swamp can yield almost anything making its way north along the Eastern Flyway."

Byrd has also photographed bobcats, rattlesnakes and black bears in the swamp. Wildlife biologists estimate there are approximately 300 bears in the Dismal. Visitors frequently see them during the early morning and late evening hours, though it is usually a fleeting glimpse. These bears are protected within the borders of the swamp, but they are readily hunted if they venture beyond.

In the far northwest corner of the swamp, at the juncture of the Corapeake and Western Boundary ditches, riders come to a most unusual sight—a vast lake littered with charred trees. This is the result of a 2010 forest fire that burned for 110 days, defying human attempts to put it out (Hurricane Irene eventually helped to douse it). The problem for firefighters was that the swamp is underlain with peat soils, which burn readily when dry. The fire burned the peat down to a depth of 4–6 feet, creating a 6,500-acre crater, which eventually filled with water.

"SPRING MIGRATION CAN BE NOTHING SHORT OF PHENOMENAL AT DAYBREAK. THE SWAMP CAN YIELD ALMOST ANYTHING MAKING ITS WAY NORTH ALONG THE EASTERN FLYWAY."

The swamp's peat soils would normally go through periods of wetness and dryness in response to seasonal rains, but the combination of centuries of draining of the swamp combined with a prolonged (2005–2009) drought has left them unusually dry. Greenwood feels it is urgent to reverse this drying trend, both as a means of restoring the swamp to its natural condition and of reducing the threat of fire. "We've had two major fires in the last five years," Greenwood said. "It's a serious business. Peat fires are difficult and dangerous to put out. The burning peat creates underground pockets that can easily collapse. In the last fire, we had a huge excavator that sunk up to the driver's eyeballs."

To mimic the natural cycles of flooding and drying that occur throughout the year, the state has installed two large water control structures at the upstream side of the ditches. This may not seem to be the "natural" way to control hydrology, but the ditches are a permanent feature that must be dealt with. "At least with these structures we will be able to control how much water goes into the ditches," Greenwood said.

Another of the state's efforts to restore the swamp's original (pre-European) condition involves replanting of native bald cypress and Atlantic white cedar. Cypress trees require wet soils to survive and are doing well where water levels have been restored. Cedars prefer drier conditions, so they are being planted in the higher elevations on the western edge of the swamp. Ten thousand of these trees were planted by volunteers in a two-week period during 2013.

Activities in the Park

The state park is an attraction in its own right, but it takes on an added dimension through a variety of activities sponsored by the park and its volunteer affiliate, The Friends of the Dismal Swamp State Park. Most famous among the regular activities is the Paddle to the Border. Held each May, the event invites canoeists and kayakers to paddle the Dismal Swamp Canal from the Dismal Swamp Canal Welcome Center on U.S. 17 to the town of Chesapeake, Va., a distance of 7.5 miles. It's a non-competitive event, a chance to rub elbows with fellow paddlers and travel a portion of this historic waterway. Paddle to the Border sells out well in advance (participation is limited to 300 boats), so interested persons should register as early as possible.

Dismal Day is another popular event, held each October. Vendors from all around the region set up booths to sell products of an environmental nature—wood carvings, paintings, bee-keepers honey. This all-day event is often accompanied by a walk/run fundraiser for the park.

The Great Dismal Swamp Birding Festival, held in April, features guided bird walks, bus tours, workshops and an Owl Prowl. April is the best time of year to see the many neo-tropical migrants that pass through the swamp on their way north.

Wagon rides through the park are held every Sunday from late March to late May. This is a great way for elderly persons and young children to get a look at the swamp without having to expend much energy.

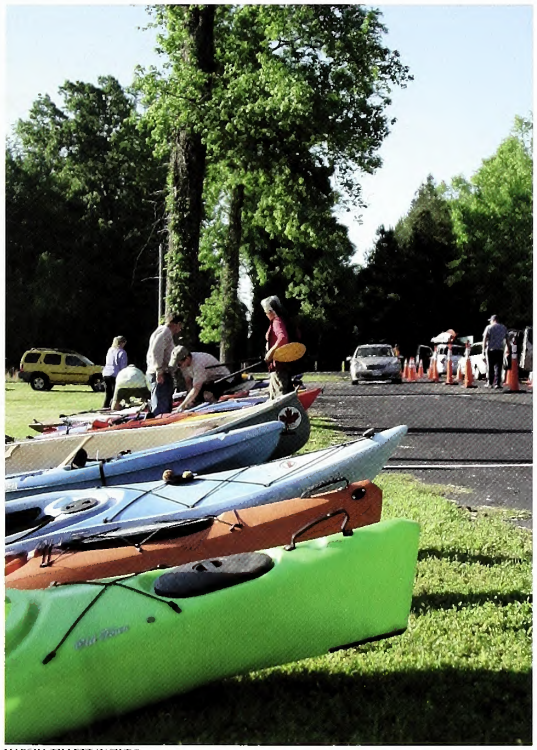
Throughout the year, the park sponsors individual classes on such topics as kayaking, snake identification, and how to find your way out of the woods. Were he alive today, William Byrd, the disillusioned surveyor, might enjoy the last one. He might even change his opinion of the swamp.

Durham freelance writer John Manuel is a long-time contributor to Wildlife in North Carolina *magazine.*

JEFF BYRD

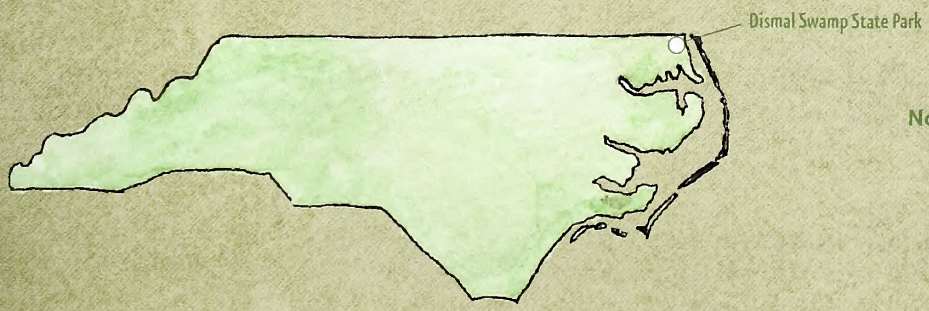
JEFF BYRD

One very popular activity is the annual Paddle to the Border held each spring. Three hundred paddlers traverse the 7.5 miles to Chesapeake, Va. The Dismal Canal also serves as part of the Intracoastal Waterway.



MARSHA TILLETT/NCWRC

JEFF BYRD



FOR MORE INFORMATION VISIT

North Carolina State Parks website: ncparks.gov

U.S. Fish and Wildlife website: fws.gov

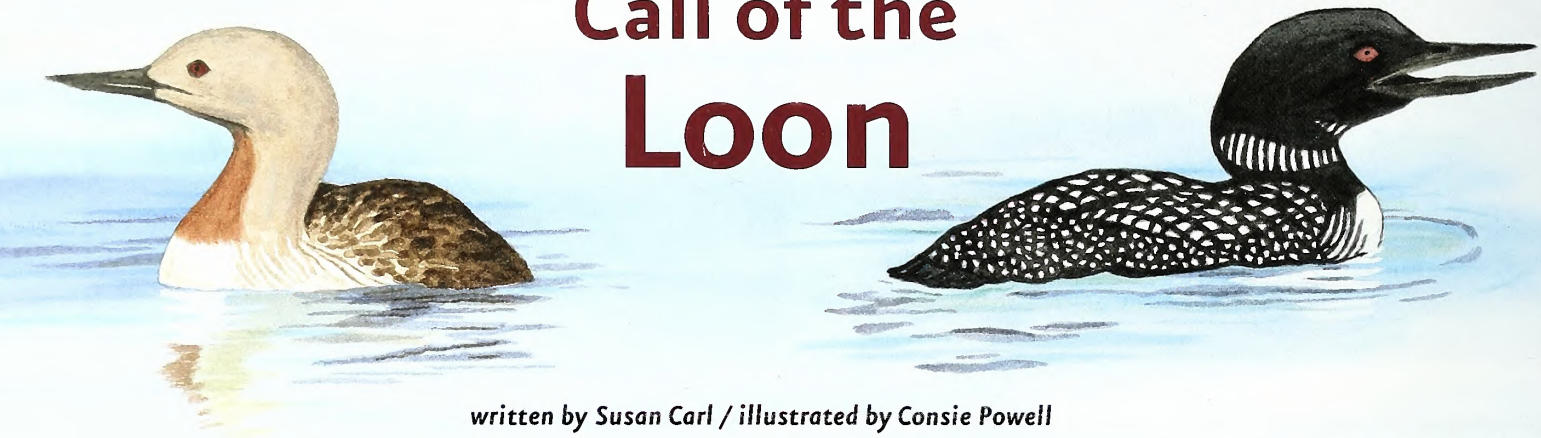
or call 252-771-6593

2294 US 17 North, South Mills, NC 27976

GPS: 36.5057, -76.3551

Naturalist John Muir described it as "one of the wildest and most striking of all the wilderness sounds, a strange, sad, mournful, unearthly cry, half laughing, half wailing." Must be the

Call of the Loon



written by Susan Carl / illustrated by Consie Powell
nature activity by Anne M. Runyon

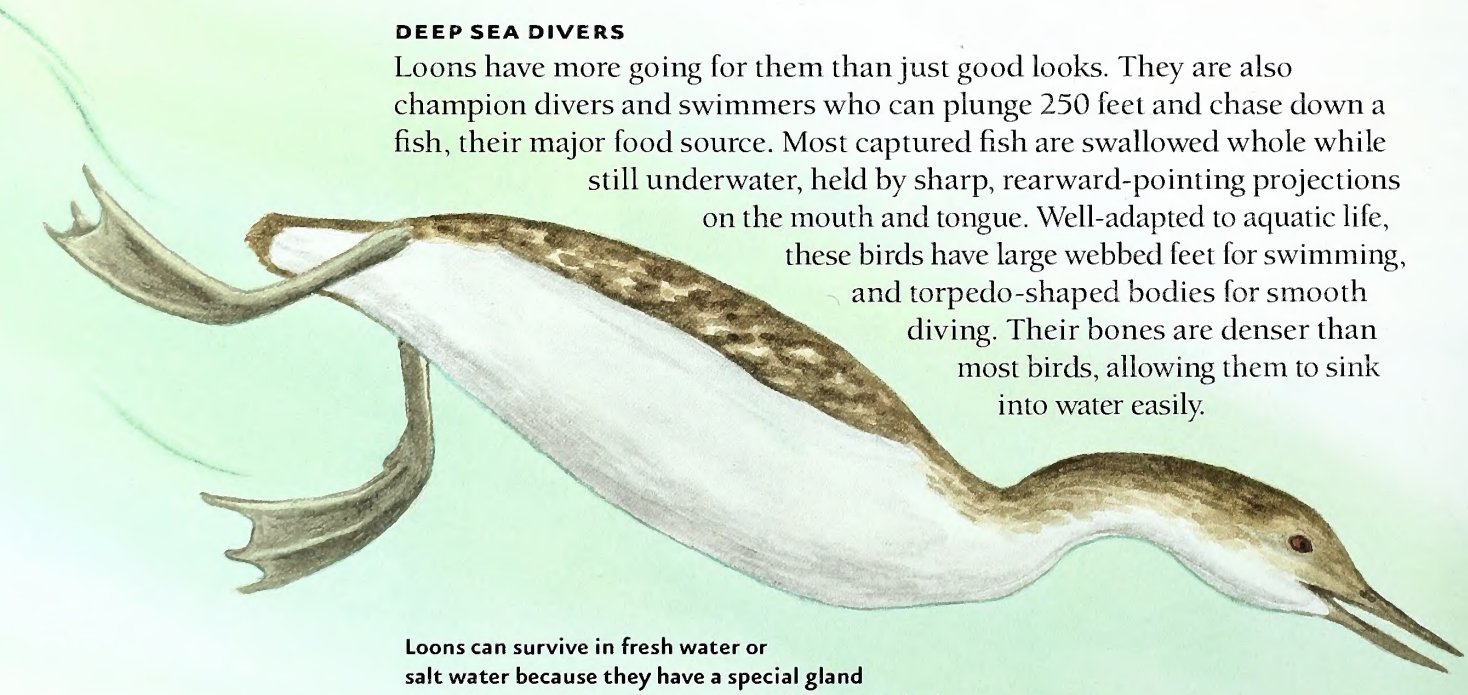
Loons are famous for their eerie, haunting calls. They may be less vocal in North Carolina, where they come to winter, but we see two species of loons frequently in this state. Common loons and the smaller red-throated loons are the size and shape of a large duck, although not part of the duck family. For most of winter loons of all species have similar plumage: dark gray feathers on top, with a white underbelly. In the late fall and early spring, however, you may catch them in their breeding finery. For the common loon that's a striking black and white checkered back with a white "necklace" and solid black head. The red-throated loon displays the red throat feathers of its name at that time. Both male and female loons are of similar coloring, although males are slightly larger.

Red-throated Loon (*Gavia stellata*) and Common Loon (*Gavia immer*) in breeding plumage

Winter plumage for both loon species is fairly nondescript.

DEEP SEA DIVERS

Loons have more going for them than just good looks. They are also champion divers and swimmers who can plunge 250 feet and chase down a fish, their major food source. Most captured fish are swallowed whole while still underwater, held by sharp, rearward-pointing projections on the mouth and tongue. Well-adapted to aquatic life, these birds have large webbed feet for swimming, and torpedo-shaped bodies for smooth diving. Their bones are denser than most birds, allowing them to sink into water easily.



Loons can survive in fresh water or salt water because they have a special gland near the eyes that removes excess salt from the body.

IT'S ALL LOONY

Loons are powerful swimmers because of their propeller-like legs located far back on their bodies. This same feature makes them awkward on dry land, which they mostly avoid. Loons can barely walk, and often scoot along on their chests to water. In fact, the common loon needs a long open water "runway" to flap across before getting enough speed to lift into the air for flight. For this reason they are rarely seen on lakes smaller than 10 acres. Common loons have been stranded on roads and highways they mistake for rivers from the air. Once on the ground, they are unable to fly off again.

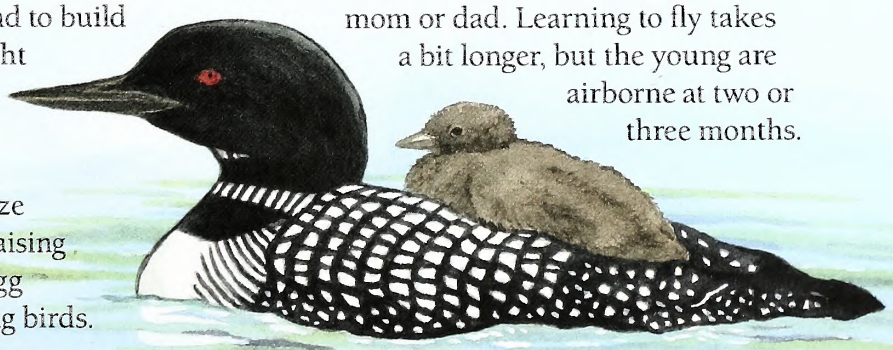
Although many think that the loons' common name derives from their haunting wails, which can sound, well, loony, it actually refers to the bird's clumsiness on land. The Old World term "lumme" or "lom" means awkward.

The common loon is unable to fly for a few weeks in winter after molting all of its wing feathers at the same time.

FAMILY BUSINESS

By spring, loons that wintered in North Carolina begin to fly north to breed on lakes or large ponds in the northern United States and Canada. Experienced parents most often return to the same body of water used previously. Loons can be quite territorial during this time, rising up out of the water with flapping wings to scare off other encroaching loons. Their watery territories may extend from 60 to 200 acres. The birds find a quiet spot on the ground to build the nest, a simple mound of plant material right on the shore. Because of their clumsiness on land, loons need to slide into the water directly from the nest. The female usually lays two olive-colored eggs, about twice the size of a chicken's egg. Both parents take part in raising the next generation, from nest building and egg incubation to feeding and protecting the young birds.

The dark brown chicks hatch out in mid-summer. Unlike many helpless baby birds, these hatchlings eat whole small fish and invertebrates right away, and swim along with their parents after just a day or two. When tired of swimming, common loon chicks catch a ride on the back of mom or dad. Learning to fly takes a bit longer, but the young are airborne at two or three months.



Loon hunting was a popular springtime activity on Shackleford Banks in Carteret County NC, from the mid-19th century to the mid-20th century. The birds were shot when beginning their northern migration, and used for stew meat ("Harkers Island turkey") and to make fishing lures from the bones. It is now illegal to shoot loons and other non-game migratory birds.

LOON SURVIVAL

Although adult loons face few predators, their eggs and hatchlings can be meals for mammals such as raccoons, skunks, and mink, and even other birds and fishes. Loon parents lure away hungry animals by quietly slipping into the water and resurfacing with a splash far from the nest. These distraction displays and the chicks' own speedy development help provide protection for the young.

Other threats come from man rather than nature. Lakeside construction limits the loons' nesting sites, and polluted lakes may kill the fish on which loons depend. Another hazard is lead fishing weights, which loons and other diving water birds often mistake for stones. Loons swallow small stones to help grind food in their gizzards, and consuming lead weights by mistake may cause lead poisoning. Buying non-lead sinkers, and properly disposing used fishing line, are two easy steps to take to help protect loons and other aquatic birds.

An image of the common loon is on Canada's one-dollar coin, commonly known as the "loonie." The common loon is also the state bird of Minnesota.

Get Outside

A wintertime trip to the coast is the perfect opportunity to look for loons in North Carolina. Both common loons and red-throated loons may be seen on our coastal waters, although the species are difficult to distinguish when in their non-breeding plumage. A scan of the sea with binoculars often reveals loons hidden among the waves. You may also observe common loons inland on large lakes and reservoirs throughout the state. Some young non-breeding birds stay here year-round, but most loons migrate in spring and fall, flying in small groups.

After spotting a loon, observe their spectacular diving skills. They may emerge from the water 50 yards from where they dove in. If the loons takes flight, watch them run along the water surface beating their wings. Their landings are also interesting: the birds fly low over the water before belly flopping down on their breasts to a skid.

Read and Find Out

- "Call of the Loon" by Paul Strong, Creative Publishing, 1995.
- "Call of the Loon" by David C. Evers and Kate M. Taylor, Willow Creek Press, 2006.
- "Loon" by Susan Vande Griek, Groundwood Books, 2011.
- "Loon Lake" by Jonathan London, Chronicle Books, 2002.
- "Loon Magic" by Tom Klein, Cooper Square Publishing, 1996.
- "The Sibley Guide to Bird Life and Behavior" by David Allen Sibley, Alfred A. Knopt, 2001.

On the Internet:

- Birds of North Carolina, nature123.net/ncbirds
- The Voice of the Loon, loon.org/voice-loon.php

Find out more about Project WILD Workshops and literature at the Wildlife Commission's website at ncwildlife.org.

SUBSCRIBE

For credit card orders, call
1-866-WILDSHOP
(1-866-945-3746)

WILDLIFE
IN NORTH CAROLINA

1 year $12 3 years $30 See reverse for payment and mailing instructions.

Name First MI Last

Mailing Address

City/State/Zip

E-mail

MBIND

PAYMENT

WILDLIFE
IN NORTH CAROLINA

For faster service, call **1-866-945-3746**
Or subscribe online: **ncwildstore.com/magazine.html**

My check for $_____ is enclosed.

MAKE CHECKS PAYABLE TO:
N.C. Wildlife Resources Commission

MAIL YOUR PAYMENT TO:
Wildlife in North Carolina
1710 Mail Service Center
Raleigh, NC 27699-1710

Orders must be prepaid. We do not bill. Please do not send cash. Allow up to six weeks for delivery on subscriptions. $25 service charge for returned checks. (N.C.G.S. 25-3-506)

Charge to MasterCard or VISA.

CREDIT CARD NUMBER

EXP. DATE

MasterCard VISA

( )
Daytime Phone Number

Print name exactly as it appears on credit card

Credit Cardholder's Signature

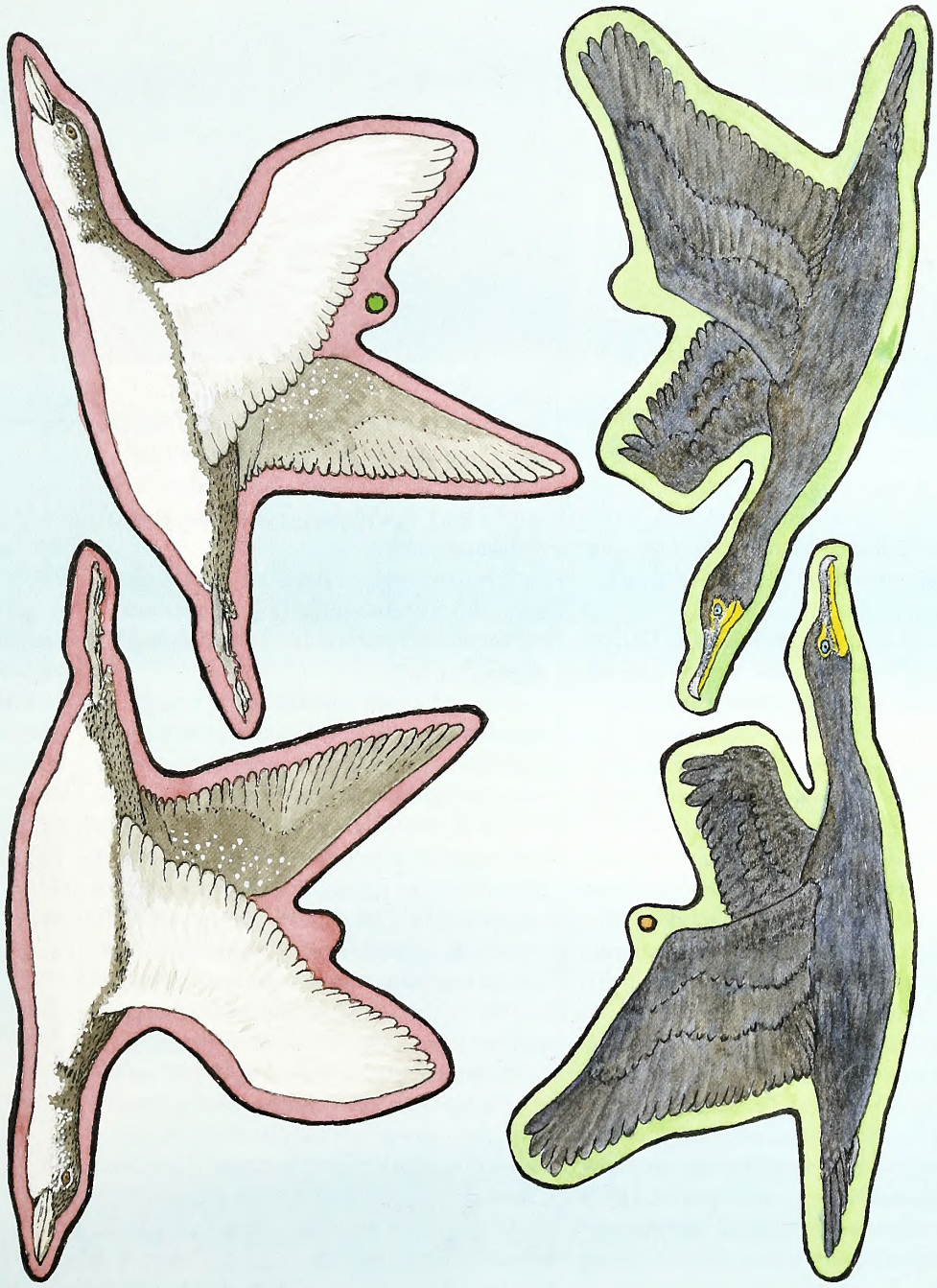
Common Loon and Double-Crested Cormorant in Winter Plumage

1) Cut out all four bird shapes following the black outlines.
Leave the colorful margins around each bird.

2) Match the two cormorants back to back and glue together.
Match the two loons back to back and glue together.

3) Punch out the holes and thread a string through each hole, making a loop.

4) Hang your loon and cormorant up together.



Wildlife Staff Receives Governor's Awards

COURTESY OF THE GOVERNOR'S OFFICE

Left photo: Matt Criscoe, left, and Gov. McCrory. Right photo: from left, Claude Smith, Reggie Barker, Gov. Pat McCrory and Richard Rains.

The N.C. Wildlife Resources Commission has been honored with Governor's Awards for Excellence, the highest honor bestowed upon a state employee. These annual awards are sponsored by the State Employees Credit Union Foundation and the Office of State Human Resources.

"These award winners epitomize the best in public service," Gov. Pat McCrory said. "Going the extra mile is something they do every day whether they are in the office, in the field and, when required, when they're off duty. We're fortunate they have chosen to work for the people of North Carolina."

Master Officer Matt Criscoe received the award for innovation and efficiency, presented for his work in the refinement of an alligator trap/transport unit. Alligator removal is a dangerous activity, and this device helps reduce injuries to staff and animals.

"It was a team effort," Criscoe said. "I got the idea from our wildlife biologists, Vic French and Robbie Norville, who have a similar device for transporting alligators. I worked with biologist Tom Padgett to modify and add a few things to the design that made it better suited for capture and transport of gators."

Sgt. Reggie Barker, Master Officer Richard Rains and Master Officer Claude Smith received the award for heroism and safety, presented for a water rescue on the Cape Fear River. In May, a stranded kayaker likely would have died if these officers had not acted decisively.

"He was caught in the rapids," Sgt. Barker said. "It was unseasonably cool and river conditions were treacherous. He was clinging to a tree limb."

Due to the cold and turbulent rapids the victim was fighting against, the main concern was getting to him before hypothermia developed.

"In my heart I knew if we didn't get him out as quickly as possible we would probably lose him in the rapids," Rains said. "I recall thinking, as we approached the rapids and I was able to see his location, we have a one-time shot at retrieving him into our patrol boat."

The officers got to the kayaker in time and then quickly got him to medical attention.

"I am thankful that we were able to get to the victim before the situation got any worse," said Smith. "I believe any wildlife officer across the state would have reacted the same way we did that night and I am glad that our agency is receiving a little bit of recognition for our actions."

The Governor's Awards for Excellence are designed to acknowledge and express appreciation for outstanding accomplishments that do not fall entirely within the scope of normal duties.

"I am filled with great pride that wildlife officers received two of the 14 awards presented," said Col. Dale Caveny, chief of the Commission's Division of Law Enforcement. "Their efforts are representative of the efforts of this agency. The Wildlife Commission hires men and women who not only work hard while on duty, but have an impact in our communities both on and off the job."

e NEWSLETTER

Get N.C. Wildlife Update—news including season dates, bag limits, legislative updates and more—delivered to your Inbox from the N.C. Wildlife Resources Commission. Sign up at ncwildlife.org/enews.

District Wildlife Commissioners Appointed by Governor

Gov. Pat McCrory appointed three men in December as district commissioners to the 19-member governing board of the Wildlife Commission.

Brian White, of Manteo, will represent District 1, which includes Hertford, Gates, Currituck, Camden, Pasquotank, Perquimans, Chowan, Bertie, Martin, Washington, Tyrrell, Dare and Hyde counties. He is on the board of the Dare County Boat Builders Foundation, and enjoys fishing and boating.

Joseph R. Budd, of Winston-Salem, will represent District 7, which includes Ashe, Watauga, Wilkes, Alleghany, Alexander, Iredell, Yadkin, Davie, Forsyth, Stokes and Surry counties. He belongs to the Winston-Salem Rotary Club. He enjoys quail hunting, fishing and sporting clays.

Albert L. Sneed, of Asheville, will represent District 9, which includes Cherokee, Clay, Graham, Swain, Macon, Jackson, Haywood, Transylvania, Madison, Buncombe, Polk and Henderson counties. He is previous chairman of the Buncombe County Land Conservation Advisory Board. He enjoys fishing, upland game bird hunting and windsurfing.

Wildlife commissioners establish policies and regulations governing hunting, fishing, boating, and wildlife-conservation activities in North Carolina. Appointments to the Commission are made by the Governor, the Speaker of the State House and the President Pro Tempore of the State Senate. Wildlife commissioners serve until reappointed or replaced.

All three men received the oath of office in local ceremonies. White and Budd will serve six-year terms that end June 30, 2019. Sneed's term of office ends on April 25, 2017, because he is filling an unexpired term of the previous District 9 commissioner, who resigned last year.

IN SEASON

In March and April, these seasons are open in North Carolina:

Hatchery Supported Mountain Trout: No fishing March 1–April 4. Season opens April 5 (7 a.m.) and runs through Feb. 28, 2015.

Light Geese (Snow, Blue and Ross'): Through March 8. Electronic calls and unplugged guns are allowed.

Roanoke River Striped Bass Management Area: March 1–April 30 (unless closed or extended by proclamation) 18-inch minimum, no fish between 22–27 inches)

Wild Turkey: Youth Week (male or bearded turkey only) April 5–11. Statewide Spring Season: April 12–May 10, 2014. Daily limit 1, possession limit 2.

There is no closed season or bag limit for feral swine, coyote, groundhog, striped skunk, nutria and armadillo. There is an open season for taking beaver with firearms or bow and arrow during any other open season for the taking of wild animals.

Check the latest *North Carolina Inland Fishing, Hunting and Trapping Regulations Digest* for bag limits and applicable maps or visit ncwildlife.org.

Big BOW Weekend Coming to Tyrrell County

MELISSA McGAW/NCWRC

The Becoming an Outdoors-Woman program will hold its annual workshop on April 11–13 at the Eastern 4-H Conference Center in Columbia, N.C.

The workshop includes expert instruction in activities ranging from fishing to target shooting to outdoor cooking and bird watching. Cost is $225 per participant and will cover a choice of four outdoor skill sessions, all program materials and use of equipment, plus meals and lodging. Amenities at the Eastern 4-H Conference Center include climate-controlled living quarters, private showers and dining hall. The Center sits on 250 acres and boasts a spectacular view of Albemarle Sound and access to nearby woodlands, meadows, pocosin forests, wetlands and tributaries.

"It's a beautiful setting, perfect for learning these outdoor skills," said BB Gillen, the commission's outdoor skills coordinator. "The boardwalks, nature trails and boat docks provide easy access to the surrounding natural areas."

Space is limited and registration is on a first-come, first-served basis.

"The camaraderie of BOW is great and the no-pressure learning environment makes it fun," Gillen said. "A gift certificate is an ideal present for any woman wanting to explore nature and expand her knowledge and skills."

Becoming an Outdoors-Woman is an international program for women, 18 and older, to learn outdoor experience in a variety of outdoor instructional activities such as archery, paddling, wildlife photography, outdoor cooking, tracking and map-and-compass work, or orienteering. In North Carolina, the program is administered by the Wildlife Commission.

For more information, contact Gillen at 919-218-3638 or bb.gillen@ncwildlife.org. BOW gift certificates may be purchased at ncwildlife.org. Partial scholarships are available.

CALENDAR OF EVENTS

Friday–Sunday, Feb. 28–March 2

The 34th Annual Dixie Deer Classic will be held at the State Fairgrounds in Raleigh. Special guests include Lee & Tiffany, C. J. Winand and Joe Teti, as well as the Team Primos pro-staffers for speaking engagements. Seminars will cover a variety of topics. Friday is Youth Day with a scavenger hunt and many other activities. The N.C. State Turkey Calling Championships will be held, along with a 3D archery tournament. Hundreds of exhibitors will have products and services on display. Visit dixiedeerclassic.org for more information.

Saturday, March 8

Get ready for spring angling with Get Hooked Fishing School at the North Carolina Aquarium at Pine Knoll Shores. The day-long course has presentations from the pros on many topics and types of fishing.

Participants enjoy up to four instructional sessions, a catered lunch, drawings for fishing gear and fishing giveaways. Topics include inshore fishing for striper, trout, drum and flounder; fishing from the surf, kayaks, fly-fishing and offshore fishing. Advance registration is required. Register online at ncaquariums.com/pineknollshores or call 252-247-4003.

Friday–Sunday, March 14–16

The Cape Fear Wildlife Expo will feature wildlife art and decoy displays, hunting and fishing products; boats and accessories; fly-fishing and decoy-carving demonstrations; conservation exhibits; outdoor sports guides and outfitters. New for 2014 is the Carolina Girls Outdoor School, a series of hands-on seminars for women (separate fee). Go to capefearwildlifeexpo.com for more information.

Readers should check with the contact listed before traveling to an event. Items for listing should be conservation-oriented and should be submitted at least four months in advance to mike.zlotnicki@ncwildlife.org, or call 919-707-0175.

The Fork in Stanly County Conserved by Catawba Lands Conservancy

JEFF AIR PICTURES

DEB RUSSELL/PHOTOGRAPHICS

The Fork Farm and Stables (The Fork), a 1,406-acre regional outdoor recreation, working farm and event facility in Stanly County, will now be conserved forever thanks to a donation to Catawba Lands Conservancy (CLC) by an ownership group led by Jim Cogdell, chairman of the N.C. Wildlife Resources Commission.

A permanent conservation easement on 1,353 acres of the property will allow continued recreational uses of The Fork, but will restrict future commercial, industrial development and other activity that could impact the land and wildlife habitat.

The Fork is an actively managed wildlife and recreation facility used for U.S. Equestrian Federation national and international events, sporting clays, fishing, hunting, recreational shooting, agriculture, biking, hiking and outdoors education. The property includes 35 miles of hiking trails, a meeting facility and a bed-and-breakfast lodge.

Named for its location at the confluence of the Pee Dee and Rocky rivers, The Fork is a biologically rich land of historical importance, with natural resources and high quality habitat for myriad species. The property is adjacent to a planned future segment of the Carolina Thread Trail.

Within a five-mile radius of The Fork, 9,900 acres of other biologically rich lands are already conserved with the Land Trust for Central North Carolina (LTCNC).

When Cogdell purchased The Fork 14 years ago, he envisioned that one day the area's natural beauty, conservation values, public amenities and rich history would be celebrated as a regional asset. But more importantly, he always desired the property be conserved in perpetuity.

"It means so much to know that finally the hard work and effort to make this area a premiere wildlife and natural destination will remain this way forever," Cogdell said. "This area is special to me, my family and the many people who enjoy coming to The Fork to enjoy nature. Conserving this land now will only make it naturally better and attract more people and families to visit and enjoy The Fork for decades to come."

"The permanent preservation of this magnificent area would not have been possible without the vision and commitment of Jim Cogdell," said Tom Okel, executive director of Catawba Lands Conservancy. "Jim has been a leader in conservation for North Carolina and his passion for saving quality land is evident through the fantastic work he has done to make The Fork a haven for wildlife and place where many people can explore and learn from nature—today and always."

The Fork is located at 3200 Fork Road in Norwood. Call 704-474-4052 or visit forkstables.com for more information.

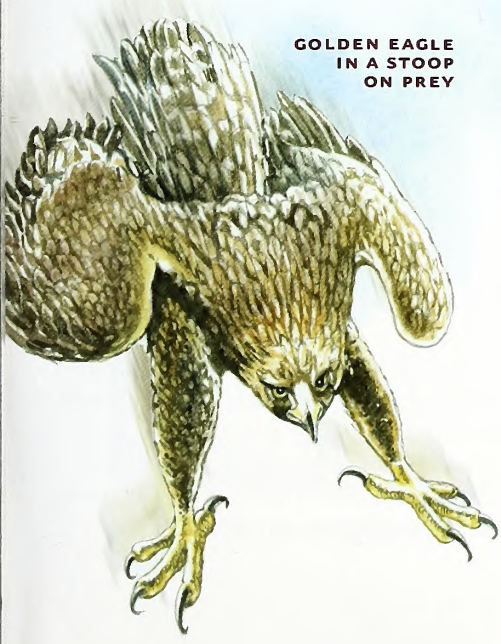
Why Do Golden Eagles Have "Fingers" On The Ends of Their Wings?

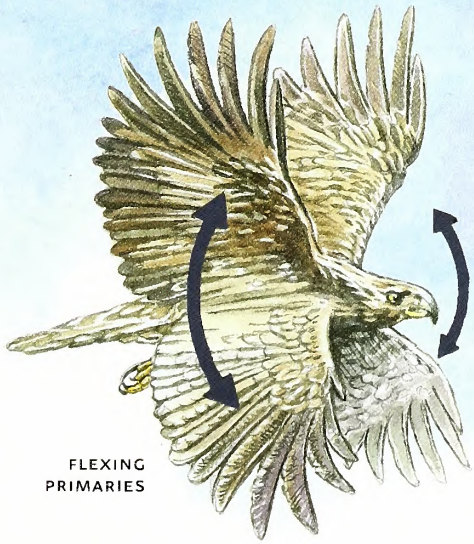
written by Clyde Sorenson
illustrated by Jim Brown

GOLDEN EAGLES ARE AMONG THE MOST POWERFUL BIRDS IN NORTH AMERICA. In level flight they can cruise in soaring flight effortlessly at 35 miles or more per hour, and they can stoop at speeds perhaps exceeding 100 miles an hour. One of the main reasons they are so strong and capable in the air is the shape of their wings—and those slotted "fingers" formed by the emarginated outer primaries are crucial to the wings' function.

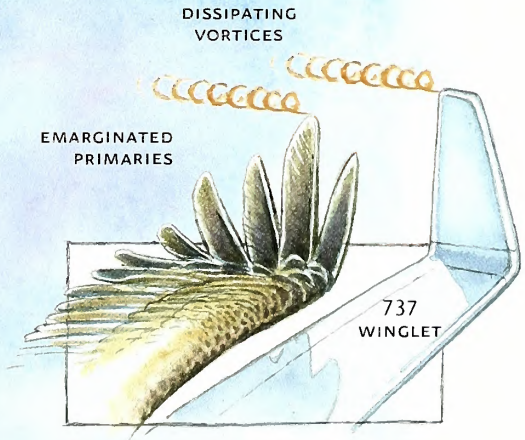
Eagles spend much of the day soaring in search of prey, typically over mountainous terrain. Even though its wings may span more than 7 feet, an eagle's wing is relatively short and broad; this allows the bird to make the tight turns necessary to stay in narrow thermals of rising air. Long, narrow wings, like those of an albatross, would allow the eagle to soar at much higher speeds, but it could't turn tight enough with such wings.

The real beauty of a bird wing is in its ability to dramatically change shape. When the bird wants to really accelerate, as in a stoop on prey, it folds the wingtip slots and flexes the wing inward, converting a broad soaring wing in to the pointed, high speed diving wing of a falcon.





Those emarginated primaries also provide additional lift when the bird is engaged in flapping flight- because of their shape, and the way they flex under pressure, each functions as a little additional wing, allowing the bird to carry heavier loads when the need arises.



Short, broad wings are great for slow gliding and tight turns, but they create large, drag-inducing vortices that roll off the end of the wings. The slotted wing shape provided by the emarginated primaries dissipates these vortices, much like the winglet on the tips of the wings of Boeing 737's, decreasing drag.

Beer Tying

written by Jim Dean

One evening in 1995, Malcolm Finlayson was sipping a brew in a neighborhood bar he frequented near his home in Chapel Hill, and happened to mention that he and a few of his fly-fishing buddies liked to get together occasionally at one of their homes to tie flies, plan fishing trips and sip a few beers.

JIM DEAN

"Why don't you meet here?" the bar owner replied, sensing an economic opportunity. "I can set up a table. Tell me what you need."

Malcolm immediately saw the potential. Taps would never run dry, and burgers, fries and wings would be at hand. Better yet, the servers would surely be more attentive (and attractive) than his fishing buddies, perhaps even innocently flirtatious.

The following Monday about suppertime, Malcolm and his friends set up their tying vises at a table off in a corner of the bar and plugged their lights into a strip of outlets provided by the establishment. Then, they ordered a pitcher of Yuengling and began cheerfully dubbing bodies and winding hackle.

"The total lack of organization is clearly an appealing feature."

Initially, they anticipated a few denigrating comments but, to their surprise, no inebriates—well, very few—proved annoying.

"Of course, we attracted some attention, and still do, but mostly from curious onlookers who actually seemed interested in what we're doing. Some even asked if they could tie a fly, and we were happy to help them."

Word began to get around, and more fly-tiers began to show up for sessions, especially other members of the Triangle Fly Fishers and the local chapter of Trout Unlimited. The vibe was festive, flies were actually produced (against the odds) and "Beer Tying" was launched as a tradition.

Most of the fly-fishermen who attend regularly live in the Raleigh, Durham and Chapel Hill area, and the bar of choice has always been centrally located so that no one has to travel very far. For the past eight years, "The House" west of Durham on Miami Boulevard has been bar center, though it's changed ownership.

Depending upon the time of year, there may be as few as a dozen tiers or as many as 30 or more. Tiers usually begin to arrive about 6:30 p.m. and few stay later than 9:30—most have to work the following day. By then, the serious tying has typically degenerated into a bull session with tales told, tactics debated and trips planned. Indeed, some fishermen come simply for the company. I, infamously, tied only a single foam beetle during my first two years of attendance—it has been uncharitably suggested that beer may have played a role.

The total lack of organization is clearly an appealing feature. There are no membership requirements—tiers and kibitzers come and go, and newcomers are made to feel at home—well, at the bar, anyway. Likewise, there are no officers, no rules, no dues, no programs and no business agenda. Malcolm is still the glue, but his only duty is to send out a brief reminder every two weeks to all who furnish him an e-mail address.

The array of skills demonstrated is impressive—some tiers have over 50 years of experience and, because this part of North Carolina has grown rapidly, many have imported their skills from far-flung former residences. The approaching season tends to dictate the kind of flies tied on any given night. In winter, white bass, shad and striper patterns for the spring spawning runs may dominate, but trout flies are always in fashion for North Carolina's 4,000 miles of freestone streams and for the South Holston and Watauga tailwaters in east Tennessee.

Someone is usually tying panfish flies or spinning deer-hair bass bugs—even flies for carp. Lots of flies are also tied for saltwater species along the coast, particularly for false albacore at Cape Lookout, and lucky anglers headed to the Caribbean need permit crabs, bonefish Gotchas and tarpon flies.

Almost from the beginning, this loose-knit fly-tying group has included women fly-fishers who can hold their own creating intricate fly patterns (and sopping suds). One tied handsome salmon flies on dulled hooks to sell as fashion accessories.

No formal tying lessons are offered, but even the most advanced tiers routinely pick up useful tips, and the group invariably leaves generous ones for the wait staff who, in addition to tending the pitchers, also dismantle the electrical outlets and vacuum up all the errant feathers, clumps of fur and strands of Krystal Flash after we leave.

"The fly-tiers are great, and we love having them," says Janell Harris, one of several waitresses at The House. "I've been serving them since they began meeting here, and we've all become such good friends that I'm even on the email list."

To paraphrase Billy Currington's recent country anthem: fishing is great, beer is good, and fly-tiers are crazy (but only if they don't show up).

GUY LIVESAY

Mockingbird chicks

OUTDOOR MOMENT

IN THE MAY · JUNE ISSUE

CHIP LAUGHTON

NORTH COUNTRY FLIES
Soft hackle flies, perhaps the oldest patterns in fly-fishing, originated in northern England and the Scottish uplands, but they work just as well in the Appalachians.

PLUME HUNTING
Market hunting for plumes for the American millinery trade took a terrific toll on North Carolina's shorebirds in the late 19th and early 20th centuries.

MIX
Paper from responsible sources
FSC® C015782
www.fsc.org

FIND US ON THE WEB AT *ncwildlife.org*

Lithography by PBM Graphics Inc., Research Triangle Park, North Carolina